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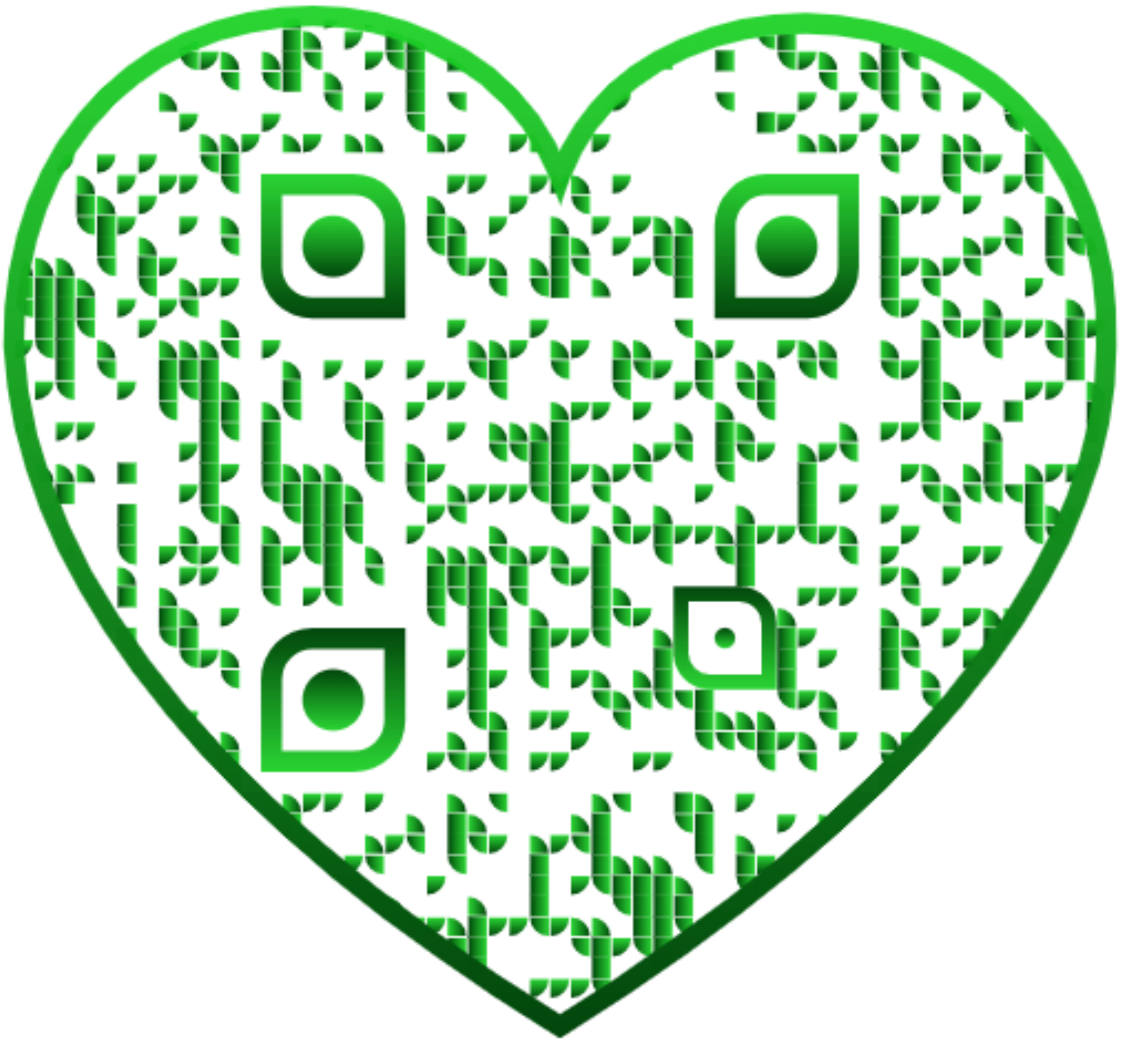

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AS WE SEE IT

BY JIM AUSTIN (WITH READERS)

THIS ISSUE: Jim passes along some of the new rock music recommendations he received in response to a request.

Some new rock music

My As We See It column in the November 2021 issue of *Stereophile* was a sincere expression of regret over my inability to connect with current rock music. It ended with a request for recommendations. I got 'em. What's more, most (but not quite all) of those who responded found themselves in the same situation: They too found most current rock'n'roll difficult to relate to.

So, it seems appropriate to share some of the responses, right here on this page. But first, I'll note a few bands and albums from the last couple of decades that I like very much but failed to mention in that column: Spoon, especially the *Transference*; Wilco, especially *Yankee Hotel Foxtrot*; TV on the Radio, especially *Return to Cookie Mountain*.

Those albums, though, are a little bit old, so beyond the scope of my current plea, which was for music of the present moment—released, let us say, during the last several years by bands that weren't around until a few years before that. Some of the recommendations below violate one or both of these requirements—the band has been around too long, or the music isn't quite recent enough. I decided to include them anyway because they're pretty recent and they're good.

I received far too many strong recommendations to include on this page. This is just a sampling, but if it's on the list, I've listened to it and, while I may not connect with it deeply, I can at least understand its appeal.

The musical act most frequently recommended: Wet Leg, comprising two young women from the Isle of Wight. They don't have an album yet—just two singles. Both are hilarious and catchy as hell, especially "Chaise Longue." They're almost a novelty act, but then so was Devo. So were the B-52s.

Here's an excerpt of an email I received from Chris Livengood (who, with his wife, whom he met "in underground punk/hardcore clubs in the '90s," runs EMBER Audio + Design in Winston-Salem, North Carolina). "There is so much great shoegaze, post-punk, hardcore, and metal worthy of exploring, but a crux for me has always been that it needs to be lyrically relatable and make me want to raise my fist or convulse as well as this aging body will allow." Chris recommends Drug Church, specifically their LP *Cheer* and recent single "Tawny." Both, Chris writes, "are seemingly built from familiar parts, but a recombination with more brains, insight, and verve than seemingly exists elsewhere." He ends with, "if it doesn't sound good on your system, head to the car, roll the windows down, drive far, and turn it up. It's balm for you, not your gear." Hear, hear.

Jerry Jarvis of Midlothian, Virginia, took an oblique approach to satisfying my request for new music: "Why not try going deeper on the Glory Days of artists you already like or even their contemporaries? For example, I'm a big Linda Ronstadt fan, and I've had a great time finding old Karla Bonoff albums and listening to her originals of many of Linda's best tunes. … Another great example is Georgie Fame—his transition from rock and skiffle in his early days to the wide variety of jazz he does now is always an enjoyable listen."

"If it doesn't sound good on your system, head to the car, roll the windows down, drive far and turn it up."

Rick Dembicki of Calgary, Alberta, Canada, recommends Freedom Fry. "Check out their cover of 'Smells Like Teen Spirit.' And yes, I am old enough to know the original." Rick also recommends Montreal's Fwonte. "'Peyi' is a beautifully crafted—nay, near-perfect—three-and-a-half minute, highly danceable wonder. I look ugly when I dance, but I just can't help it when I play this man's music."

Mike Harkins, who is based in Austin, Texas, and so has ample opportunity to hear new music, writes, "For a real blues-rock experience, I heartily recommend Carolyn Wonderland's new release, *Tempting Fate*. Carolyn just got off a tour with John Mayall, and he doesn't hire slouch guitar players."

James Price, another Texan—from Galveston—offered these recommendations: "Wooden Fields, *S/T*; Motorizer, *Seduction*; Mercury Boys, *Return to Cinders*; Devil's Witches, *Cherry Napalm*; Laino & Broken Seeds, *Sick to the Bone*; Night Beats, *Outlaw R&B*."

Not everyone who wrote in was a stranger. I received the following from Kurt Gottschalk, who, in addition to contributing music reviews to *Stereophile*, hosts Afternoon New Music Tuesdays at 3pm on WKCR, the excellent Columbia University radio station. (Yes, there's an internet radio stream, so check it out.) Kurt writes, "Here's a sampling of rock albums from 2021 I enjoyed: Black Midi, *Cavalcade*; Fucked Up, *The Year of the Horse*; Big|Brave, *Ilk*; Melvins, *Five-Legged Dog*; Liturgy, *Origin of the Alimonies*; Dry Cleaning, *New Long Leg*; plus the new Nobro single."

London-based Phil Brett, another *Stereophile* music reviewer, also recommended Dry Cleaning's *New Long Leg*. Phil calls Dry Cleaning a "great South London post-punk band" and their new album "Brilliant. Female spoken vocals over fantastic beat. Worth checking out. Competing with Pharoah Sanders's *Promises* for new release of the moment." Interesting juxtaposition.

I also heard from Jason Davis, who has written two My Back Pages essays over the last couple of years. Jason offered a long list of thoroughly annotated recommendations, all on the heavy side, almost enough for a column all by itself. I'll save most of that for a different moment and include just one of his recommendations here. "Deafheaven's *Infinite Granite*," he wrote, "is my album of the year."

Mastodon's album *Hushed and Grim*, released in September, was recommended by several readers.

From Josh Zeckser of Portland, Oregon: "Nova Twins"—you're welcome! Can I have a free tube amp now, please?" Sure you can—wait, you meant from me? No, sorry.

I'll end with what might be my favorite email so far: "I am sending this for my brother Steve. He has a suggestion. Call him at [phone number deleted], 8am–8pm EST before November 1." ■

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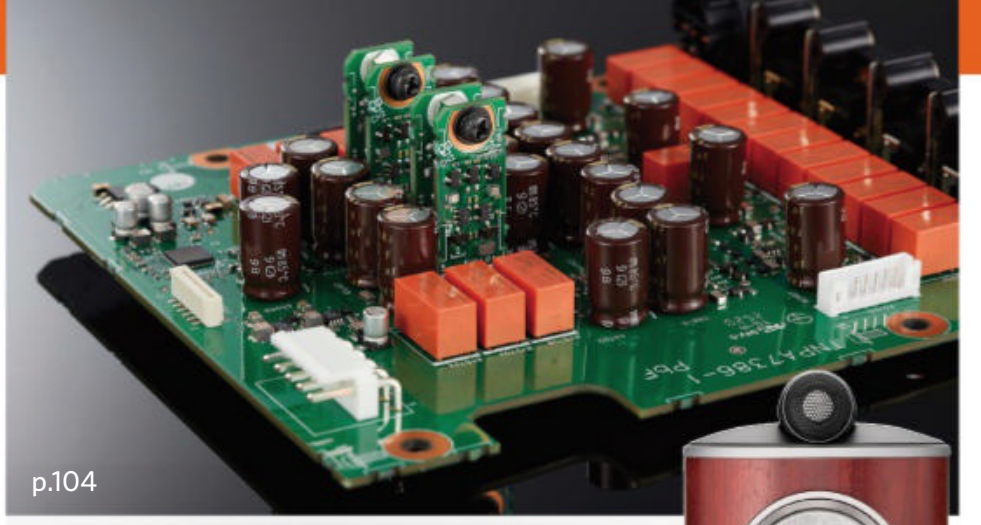
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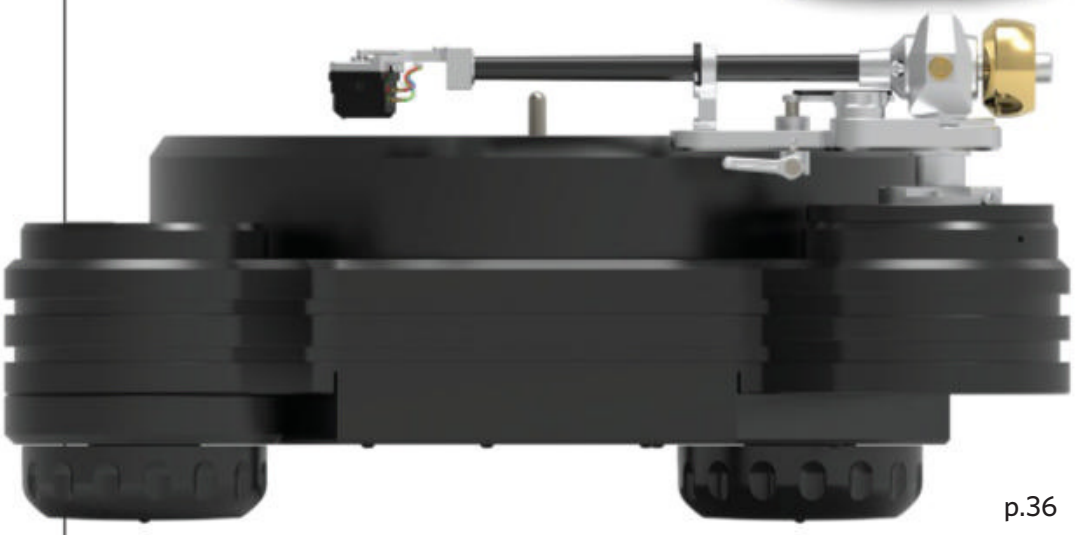
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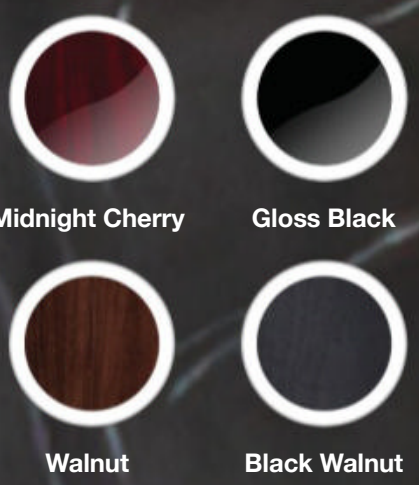

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Many speaker designers have different ideas about how a speaker should be voiced. Some voice their speakers to be more like studio monitors, which intentionally heighten the listeners' awareness of potential recording flaws—a lousy recipe for speakers whose first job is to deliver the thrill and beauty of music and soundtracks.

Other speakers are voiced to grab your attention in the strange, distorted, emotional environment of listening while standing in a store. This voicing technique is a bit like early color TVs being sold by turning up the color too much. These speakers might win the "look at me" war in a retail showroom, but at the expense of making music and movies unnatural and tiring at home.

We'd like to boast that GoldenEar speakers are perfect, voiceless. But that would be absurd—nothing is perfect. The real difference between lesser and greater products is in their designers' ability to manage inevitable imperfections.

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LETTERS FEEDBACK TO THE EDITOR

TAKE HEED! Unless marked otherwise, all letters to the magazine and its writers are assumed to be for possible publication. Please include your name and physical address. We reserve the right to edit for length and content.

Hyperbole

Love the magazine and have for a number of years. If my wife gets the mail and the latest issue is there, she snarkily tells me, "Your porn arrived." It immediately makes me happy.

Here's one other thing that makes me happy: I don't have to fret over whether my speakers are toed in to that last quarter of an inch or if my wires are run so as to remove any chance of stray radio-frequency interference. My system is modest, especially compared to those of your reviewers and many of your readers, costing in the range of $15,000, give or take.

Does mine sound as good as theirs? Of course not. I'm surprised, actually, that I have a couple of things that are in the last Recommended Components list. But I guarantee you mine gives *me* just as much enjoyment, with a fraction of the fuss, whether it's streaming a Mendelssohn organ sonata or spinning a Pink Floyd SACD or Drive-By Truckers LP.

By all means, keep it up. I love the hyperbole. I've read about so many additions and upgrades leading to a "completely new level" or that "removed a glass from in front of the music"; it makes me wonder about some of your reviewers. I won't name names, but some have risen to so many new levels over the years that at some point back in the past their stereos must have sounded like crap.

But that's part of the fun as well, as in coming home and hitting the power buttons and not stressing over the small stuff. (I know, small to me can be *huge* to others.) Thanks to all of you!

Glenn Floyd
Henderson, Kentucky

Mr. Floyd, thanks for the kind words. I'm thinking, though, that if you look carefully, you won't find too much of that "completely new level" stuff in our magazine. That said, surprising as it seems, audio equipment really does keep getting better, and sometimes there is fundamental improvement for other reasons, as when Mikey upgraded his electrical wiring. And in some categories—I'm thinking of Mikey again, and turntables—the very best really is that much better than what came before, if also far, far more expensive. I can't wait for the trickle-down.—**Jim Austin**

The zenith angle

I read J.R. Boisclair's comments regarding fine-line contact styli with some interest. Recently, by scrutinizing low-quality microscopic images I took of my "MicroLine" stylus, I determined it probably wasn't perpendicular to the cantilever. When I set the cartridge out of alignment to compensate for zenith error, there was a significant reduction in certain distortions that had been causing me fits for months. Tweaking and retweaking the usual adjustments had failed to produce comparable improvement. This episode would seem to confirm Mr. Boisclair's point: that precise alignment of line-contact styli is critical.

> Wouldn't it be great if cartridge manufacturers took a minute to measure the zenith angle of each new stylus sold and include that data in the box?

Wouldn't it be great if cartridge manufacturers took a minute to measure the zenith angle of each new stylus sold and include that data in the box? Alternatively (and maybe preferably), one high-resolution photo of the stylus taken from the record's perspective could be enclosed with every new cartridge, allowing a purchaser to measure the zenith angle. In either case, manufacturers are in the best position to provide this information which would cost them very little. To the person setting up a new cartridge, it would be invaluable.

Thanks for the great articles and recommendations.

Lou Reinwasser
Ormond Beach, Florida

Mr. Reinwasser, I think your recommendation makes sense, especially for phono cartridges beyond a certain price. Perhaps a step in that direction: In a Zoom interview with Michael Fremer for Analog Planet about the new Verismo cartridge, Ortofon's Leif Johannsen said that with their reference-level cartridges, Ortofon will provide photos of the stylus showing SRA at the recommended tracking force. It's not what you're suggesting, but it's a step in the right direction.—**Jim Austin**

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Getting your hi-fi fix(ed)

The article by Julie Mullins was a great pleasure for me.

I was born in 1959, living in Germany. After school, I started an apprenticeship in a master shop to learn and become a federally approved radio and TV technician. This education belonged at that time to the historically grown system of craftmanship training in Germany (Handwerksberuf). This professional education is still unique in the world. The apprentice is hired and, working in a master shop, learns the practical side of the job (in my case, fixing TVs, radios, boom boxes, hi-fis, VCRs, etc) plus a very thorough school education teaching everything from math, technical background, society, and politics. The final exam has a theoretical part and a practical part. Here you have to build an instrument (in my case a tube voltage meter), and you have to repair a color TV (of course with CRT) as fast as you can. After the education, you have rock-solid knowledge of consumer electronics and beyond.

I am glad to hear that those skills are now in demand. I always helped people to get their stuff fixed. However, digital sources are nearly impossible to repair on a bench.

Fixing old hi-fi is comparable to restoring old cars. Special parts, like custom-made ICs (often found in RIAA preamps of the '80s and in tuners) are nearly impossible to find. Semiconductors in general are fairly okay; the same with passive things like capacitors and resistors. Potentiometers can be tricky if their layout is specific to a PCB.

Fixing old stuff is fun but demanding. I plan to retire in a few years and will then definitely open a business for hi-fi repair.

Klaus Elischewski
Dortmund, Germany

A little advice

I have been in this hobby for 56 years. It is NOT about the equipment, speakers, wire, sources, etc. It is ALL about speaker placement, listening position, and room acoustics. Then sit back, get comfortable, and ENJOY the music.

Dan Steele,
Emeryville, California

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AUDIO NEWS & VIEWS

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US: CLEVELAND, OHIO

Jason Victor Serinus

Thom Moore, the Grammy Award–winning producer and oboist who cut his teeth at Telarc Records before co-founding Five/Four Productions, died in Cleveland, on October 16, of a fast-moving brain cancer. He was 56.

Moore's passing came at virtually the same time that *Stereophile* named his most recently released project, cellist Zuill Bailey's DSD recording of Bach's Six Suites for Unaccompanied Cello (Octave Records), our Recording of the Month.

Moore's first two Grammy Awards, for Best Classical and Best Choral, came in 2002 for Robert Spano and the Atlanta Symphony Orchestra's fabled SACD of Vaughan Williams's *Sea Symphony*. Two others followed, both for Best Crossover, with the Turtle Island String Quartet.

A graduate of the Cleveland Institute of Music, Moore made his mark as a crack oboist in the Cleveland area. A member or regular guest of the Cleveland Pops Orchestra, Ohio Chamber Orchestra, and the former orchestras of the Cleveland Ballet, Cleveland Opera, and Lyric Opera Cleveland, he cofounded and served as principal oboist of the Red Orchestra.

"Thom had an ear second to none," veteran recording producer and Telarc colleague Elaine Martone told *Stereophile*. "I never understood why he didn't end up a regular oboist with a major orchestra. He realized he was ill when, on October 1, he was giving an 'A' to the Cleveland Opera Orchestra and no 'A' came out. Somehow, he got himself home. Sixteen days later, he was dead."

"He had the funniest, quirkiest, snarkiest sense of humor," Martone said. "Everyone knew to watch for the time he would raise his eyebrow a certain way. If a conductor saw that eyebrow, they'd know from the look on Thom's face if their conducting was on or not."

According to Martone, at a very young age, Moore declared, "What you need to do is to reach the face of your audience with your playing. If you don't make that heart connection, the audience doesn't care. I don't care how technically perfect you are; the magic is in the communication. Thom understood that."

Bailey and Moore had five projects in progress at the time of Moore's death. "I felt like Thom was family and a brother," Bailey said from the Ikeda Theater in Mesa, Arizona. "We've grown up together. We often held on to each other for dear life because so many of our recordings were set down 'live.'

"You have to trust someone completely as you walk out on stage to record. When the pressure was on, Thom was the guy you wanted to be standing with. He was so magnificent in the way he allowed me to be the best me I could be. With every note I played while we were recording the Cello Suites, I felt like Thom was sitting right next to me and we were sharing something extraordinary. He really inspired me to explore the elegance and softness in Bach's music. He kept saying, 'Just play. Let it happen. This is yours.' But I think he was like that with everybody. He was such a good friend. I took him everywhere I could, because I wanted to share life with him. He definitely changed

CALENDAR OF INDUSTRY EVENTS

CALIFORNIA

■ Friday–Sunday, January 14–16, 2022: The inaugural AudioConLA, an international high-end audio show sponsored by the Los Angeles and Orange County Audio Society, will be held at the Hyatt Regency Newport Beach (1107 Jamboree Rd., Newport Beach). This event is organized under the direction of Sarah Tremblay and Michel Plante, the duo behind the Montreal Audiofest and the Toronto Audiofest. AudioConLA will endeavor to offer the public a safe and fun environment conducive to listening to music and shopping for audio and audio-related accessories. AudioConLA 2022 will also present two music concerts to be held at the hotel's 1200-seat, tree-lined outdoor amphitheater, home of the Newport Beach Jazz Festival. Performers will include jazz pianist/singer Anne Bisson on Friday evening and pop sensation Charlotte Cardin on Saturday evening. Hotel rooms at special accommodation prices are available. LAOCAS members, students (16+), seniors (65+), and veterans receive a special discount for admission tickets, and children under 16 enter free when accompanied by an adult. Local guidelines for COVID safety will be followed. Detailed information for exhibitors and visitors is available at audioconla.com.

■ Sunday, February 27, 2022, 2–5pm: The Los Angeles and Orange County Audio Society will hold its monthly meeting at Audeze in Santa Ana (3412 S Susan St.; audeze.com). Guests, visitors, and new members are invited to a factory tour of Audeze, a pioneer in planar-magnetic technology applied to headphones. Audeze's Dragoslav Colich (CTO) and Sankar Thiagasamudram (CEO) will lead the tour. A Q&A session will follow. New products will be available for demo, a 25% discount will be offered to in-person attendees, and a new LCD-5 planar-magnetic headphone will be raffled off. Lunch will be served, and Eastwind Import will offer CDs and vinyl records for sale. Free parking is nearby. Plan to show a current COVID-19 vaccination record or record of a negative COVID test taken within the previous three days. For more information, visit laocas.com or call Mike Wechsberg at (714) 906-9780.

TEXAS

■ Thursday, December 16, 6:30pm: Timbre (2245 1/2 Portsmouth St., Houston, TX) will host an evening with special guest Richard Vandersteen, founder and head engineer of Vandersteen Audio, and Vandersteen's global sales manager, Brad O'Toole. The event will feature Vandersteen's new Model 7 XTRM loudspeakers. RSVP required: Call (713) 523-0494 or visit timbrehouston.com and select "Events."

everyone around him and brought everyone closer."

Recording engineer Robert Friedrich, the only surviving member of the Five/Four Productions team, which once included fellow Telarc veterans Michael Bishop and Moore, took Moore for his biopsy three days before his death. Reached while traveling between gigs, the classically trained violinist agreed that Moore had "this tremendous ability to communicate to musicians in a way that took performances to another level. He was also very warm and smart and could make a big impact on people through one meeting. He could take something that might be negative and refocus it into something positive. And as serious as he was, he also had a sense of humor that helped you get to the finish line in a most remarkable way."

Friedrich, who also heads the audio lab at the Library of Congress, said that he and Moore spoke nearly every day, like family members. "He was our superweapon," he said. "Thom could edit things at three times the speed of other people and do it perfectly without sacrificing quality. He was extraordinary. I always told my three kids, 'If any of you kids turn out like Thom, I'll be so proud.'"

GERMANY: ST. GEORGEN, SCHWARTZWALD AND AUSTRIA: VIENNA

Julie Mullins

Austria-based Audio Tuning Group, parent company to the Pro-Ject, Musical Fidelity, and Tone Factory brands, has announced an exclusive partnership with German turntable manufacturer Fehrenbacher. Audio Tuning Group "secured the full production and development capacity of Fehrenbacher, with the agreement to take over all the costs and guarantee to take over the full production [operations]," Audio Tuning CEO Heinz Lichtennegger told *Stereophile* in an email. The plan is to expand the factory's volume and improve quality and design capabilities, he said. In turn, Fehrenbacher will manufacture exclusively for Audio Tuning.

How will these developments impact Audio Tuning's brands? Pro-Ject will get a new line of *automatic* turntables, dubbed Automat. Lichtenegger explained that after seeing increases in sales of (mostly lower quality) automatic turntables, he wanted to create something better. He sought superior automatic technology that offered more reliability and that wouldn't compromise sound quality too much. Fehrenbacher has that expertise, he said.

The Tone Factory models, which are sold directly, had been produced in Litovel in the Czech Republic, where many Pro-Ject 'tables were also made, but now they will be made at the Fehrenbacher factory.

Audio Tuning will also launch a new brand, Rekkord, which Lichtenegger said will have "a more retro look, more switches and dials." Some products might be based on existing Fehrenbacher designs. He said investments in new tools and other improvements will allow them to produce some "classic, old-but-good designs.

"The base idea of my work at Pro-Ject or Audio Tuning is to bring as many people to the hi-fi hobby and listening at home as possible," Lichtenegger said.

US: WORCESTER, MASSACHUSETTS

Julie Mullins

Following a move into a new production facility last year, Vinnie Rossi has kept busy during the pandemic. His eponymous company recently introduced a new amplification line, the Brama, Italian for "strong craving or desire." Signaling an upmarket move for Rossi, the flagship Brama Collection will include an integrated amplifier ($38,995), preamplifier ($33,995), and

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stereo power amplifier ($33,995). The integrated will produce 350Wpc RMS into 4 ohms, and the stereo amplifier will produce 500Wpc RMS into 4 ohms.

The preamp's and integrated's line stages are a hybrid design with discrete, class-A, directly heated 300B triode and solid-state sections. The user can switch between them by pressing a button on the remote. The stereo amplifier's and integrated amplifier's output stages are MOSFET-based.

In the standalone preamplifier, you can mix how much triode sound you want via user-adjustable setting options in 25% increments and adjust the gain in 6dB increments. To keep the signal path short, the 300B tubes are mounted on the rear panel board close to the inputs. Rossi opted to keep the tubes fully enclosed and shielded from noise instead of exposing them. To replace or roll the 300B tubes, the customer can remove the top panel.

The Brama components contain custom-designed 1750VA power supply transformers that feed discrete, dual-mono linear power supply circuitry for both pre and power amplification sections. "Ultrafast soft-recovery diodes, massive filter capacitors, and super-regulated outputs" provide "vanishingly low noise and superb dynamics," the release stated.

The circuitry is fully balanced, and all connections are XLR. Each unit ships with a pair of RCA-to-XLR adapters.

Each component comes with a solid-aluminum Brama remote control with a high-resolution display. It communicates via Bluetooth/Wi-Fi instead of infrared and is said to offer an intuitive menu structure, settings memory, and more. Its USB-C connection enables battery charging and automatic firmware updates.

"The Remote is not an afterthought," Rossi told *Stereophile*. "Instead of the touchscreens you find everywhere, it has tactile buttons. I wanted it to feel more timeless."

To give these components a distinctive look, Rossi partnered with Montreal-based industrial designer Olivier Raymond, who has worked for companies like Porsche Design and Mercedes-Benz, according to the press release. Indeed, the Brama's aesthetic is streamlined, curved, unfussy—not unlike a performance automobile's lines. The front-panel meters are reported to have "bespoke analog gauges with precision air core movements."

The Vinnie Rossi Brama Collection is expected to begin shipping to dealers starting in late 2021 or early 2022.

UK: WATERFOOT, EAGLESHAM, GLASGOW, SCOTLAND

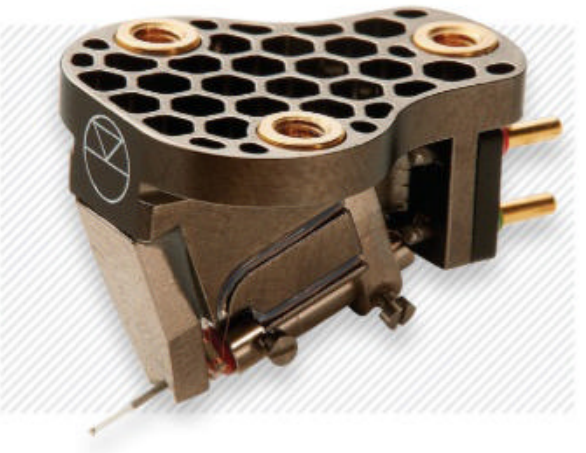
Julie Mullins

After nearly five decades as a high-end turntable manufacturer, Linn has, more recently, been immersed in developing digital components. Recently though, the Glaswegian company announced updates to the Radikal package included with its Klimax LP12 reference turntable. The Radikal comprises a power supply, a speed controller, and a motor.

According to an email from Linn Brand

Manager Joe Rodger, "The only thing that's the same [as the prior Radikal] is its casework." The main goal was to reduce mechanical and electrical noise. The Radikal now deploys six-layer circuit boards to allow shorter signal paths and uses smaller, more modern parts. The company incorporated "whisper-quiet" regulated power-supply rails into the design to reduce noise. The approach relies on "precision reference voltage, served up by a new DAC derived from technology found in our network streamer range," according to the press release. The Radikal's new DC motor also uses smaller, lower-noise components. The motor control unit is FPGA-managed. The motor's auto-calibration is said to adhere to five times tighter tolerances than before.

Linn-designed and EMT-made, the new Ekstatik MC cartridge has a microridge



stylus on a sapphire cantilever. Its body's "bespoke honeycomb cut" reduces mass to about 7gm. Its output is spec'd at 0.45mV @3.54cm/s with 100 ohms recommended loading.

The Klimax LP12 modular "complete turntable" setup comes with the Sondek LP12 (available with or without a fluted plinth), new Radikal (Machined), Urika II MC phono stage (built into a suspended base), Keel subchassis and armboard, Ekos SE tonearm, and the new Ekstatik MC cartridge. Plinth finish options include five standard wood finishes, or custom piano black, high-gloss white, and high-gloss color finishes. The Radikal comes in silver and black. The complete system retails for $28,200 and is available now. Other à la carte upgrade options are available.

CANADA: PICKERING, ONTARIO

Jim Austin

At the end of 2020, we named the NAD Masters Series M33 BluOS Streaming DAC Amplifier as both our Amplification Component of the Year and our overall Component of the Year. The M33 combines a well-designed, versatile streaming DAC with an integrated amplifier featuring highest-quality class-D amplification using Purifi's Eigentakt amplification modules. The M33 costs $4999. Considering that it's a whole stereo system in one box (except for a pair of speakers), that's a bargain in high-end audio terms. The M33 is part of NAD's Masters Series.

Now NAD has released a similar product in their less expensive Classic Series,

the C 700 BluOS Streaming Amplifier.

What's the difference between the two products? The M33 is bigger, with a bigger front-panel display. It's more powerful: 200Wpc compared to about 100Wpc for the C 700. The M33 has just one, balanced (XLR) analog input; the C 700 has two, both single-ended (RCA). The M33 has all the usual digital connectivity: AES3, electrical and optical S/PDIF, USB, and that RJ-45 (Ethernet) streaming input—plus Wi-Fi. The C 700 has only Wi-Fi, USB, and RJ-45. The M33 has a built-in phono preamplifier; the C 700 doesn't. Both have HDMI-ARC. Both decode and render MQA. For short-range wireless, both have two-way Bluetooth aptX HD: Play music from your phone or send music out to a pair of wireless headphones. Both components run the BluOS multiroom operating system. A major difference: In place of the Purifi Eigentakt tech used in the M33's amps, the C 700 uses HybridDigital UcD, from Hypex.

Perhaps the biggest difference between the two streaming amplifiers is the price. With an MSRP of $1499, the C 700 sells for less than a third that of the M33.

UK: RAYLEIGH, ESSEX

Jim Austin

British hi-fi company Roksan has announced a new series of sleek-looking hi-fi components. The Attessa range comprises four pieces: a streaming amplifier, an integrated amplifier, a turntable, and a CD transport.

The Attessa Streaming Amplifier is functionally similar to the NAD C 700 described in the previous news item: It's a BluOS-based streaming DAC with built-in amplification. It has two analog inputs, extensive digital connectivity options, and a built-in MM phono preamp. US MSRP is $3199.

The Attessa Integrated Amplifier offers all the same functionality as the Streaming Amplifier except for BluOS streaming and MQA decoding. Digital inputs are S/PDIF only. List price for the Attessa Integrated Amplifier is $2099.

The Roksan Attessa CD Transport is "Red Book" only—no SACD or other disc support. It can, however, send MQA-CD data over its single electrical RCA S/PDIF output to the Attessa Streaming Amplifier, which can then decode it. The CD Transport has an MSRP of $1099.

The Attessa turntable is a belt-drive unit with aluminum-alloy pulleys and digitally synthesized speed control. The platter is 1cm-thick glass edged with anodized aluminum. The 'table comes with a new-design unipivot tonearm and a pre-installed Roksan cartridge. It has a switchable, built-in phono preamplifier, comes in Satin Black and Satin White, and costs $1699.

UK: BISHOP'S STORTFORD, HERTFORDSHIRE

Julie Mullins

Q Acoustics has announced three extensions to its Concept loudspeaker lineup: the Concept 30 standmount ($1299/pair), Concept 50 floorstander ($2999/pair),

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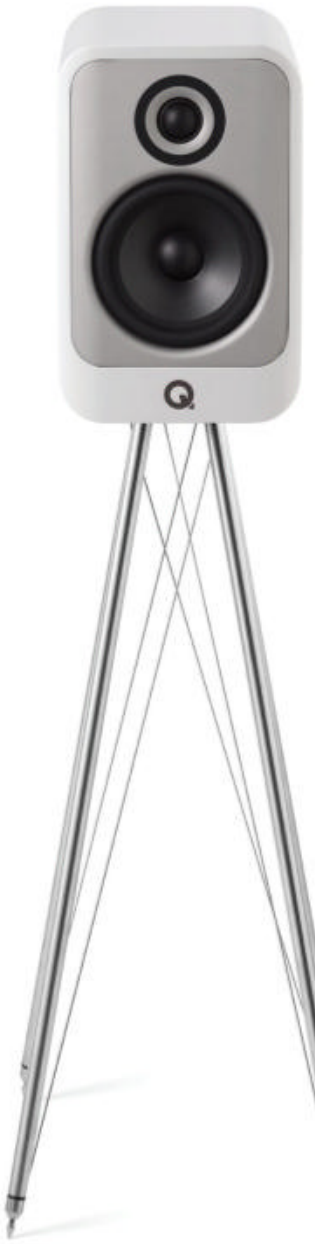

and Concept 90 center channel ($999 each). The new models borrow some technologies from the Concept line's 300 and 500 flagships but also contain specific new improvements such as redesigned 5" mid/bass drivers and 0.9" tweeters. The hermetically sealed, "floating" tweeters are mechanically isolated from the front baffle to avoid interactions with the other drivers. Their driver assemblies are mounted to the front 3mm aluminum baffle plates using pre-tensioned studs "to give the correct acoustic seal," according to press information. This approach also minimizes the assemblies' structural main-cabinet coupling and helps dampen vibrations, Q Acoustics reports. The larger mid/bass driver's voice coil now measures 30.5mm in diameter and is said to enable a 50% increase in power handling relative to a 25.4mm coil.

Like their lineup siblings, the three new models use the company's proprietary Gelcore cabinet construction tech in which a nonsetting gel adhesive is sandwiched between two layers to help dissipate high-frequency vibrations as heat, Q Acoustics says.

Concept-line finishes include lacquers in black, silver, or white. They should be shipping to dealers by the time you read this.

JAPAN: TOKYO

Jim Austin

Japanese hi-fi company Melco has added a new product to its lineup of music servers, the N50-S38. The company calls it its "first mid-range, SSD-based music library."

The N50-S38's slim, full-width chassis holds a "specially selected" 3.84TB SSD drive "coupled to the new rigid, layered SSD cradle." The N50-S38 has a more powerful power supply and redesigned isolation feet. Connectivity options include USB and Melco's usual dual Ethernet ports—one port to connect the network, another to connect directly to the DAC.

Three more special-purpose Ethernet ports decorate the rear panel: one for connecting backup media, one for memory expansion, and a third that can be used to connect a CD ripper. The IEC port is noise-filtered. The N50-S38 is Roon Ready and can output DSD via Ethernet or USB. There's DNLA/UPnP support for Qobuz, Tidal, and vTuner.

Those who buy music from HighResAudio.com or Qobuz can download files directly to the server—no computer needed. The N50-S38 comes in silver and black. In the US, the recommended retail price is $5499. It's available now, distributed by Luxman America. ■

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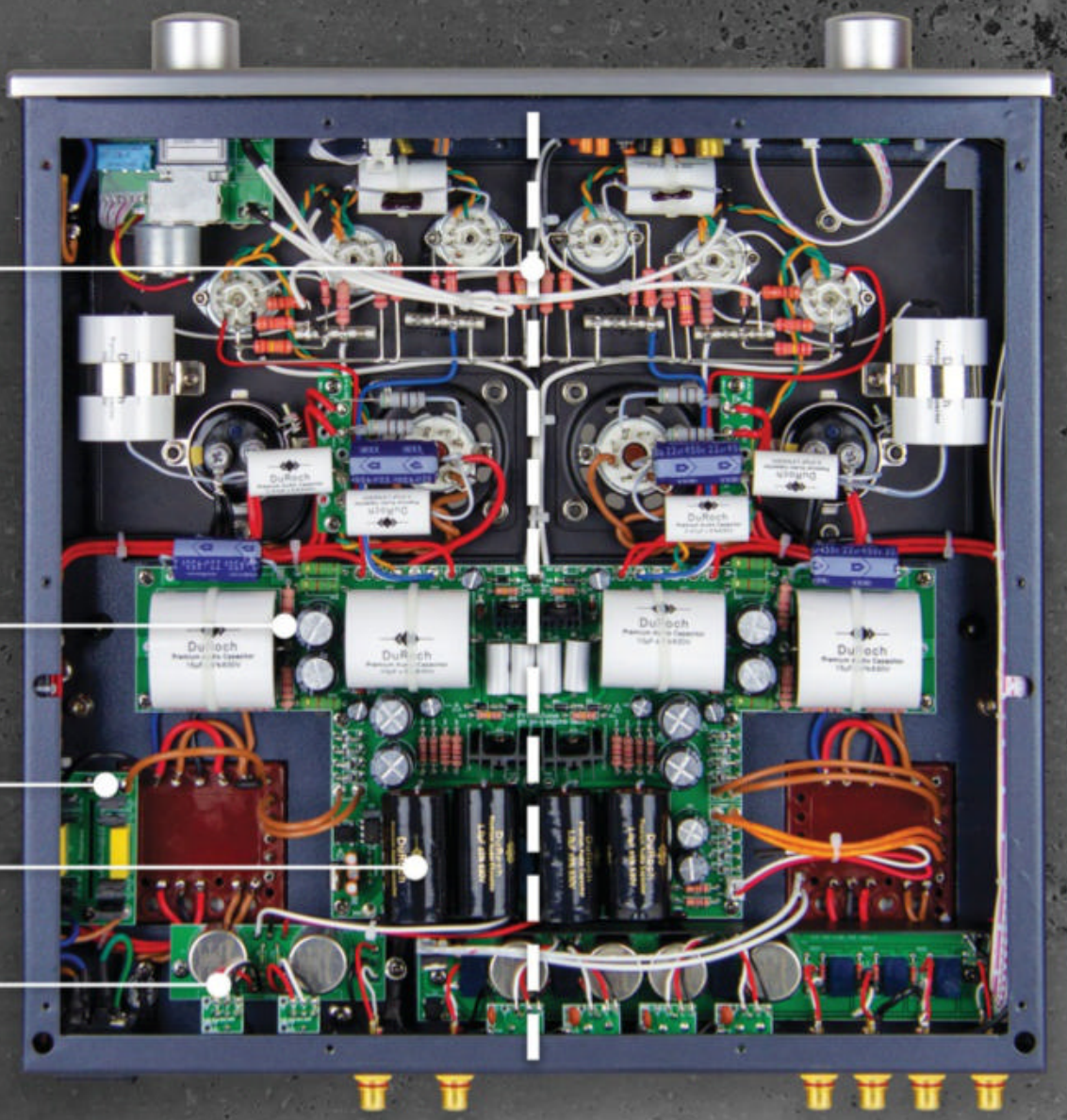

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ANALOG CORNER

BY MICHAEL FREMER

THIS ISSUE: A new premium cartridge from Ortofon; effective warp removal; platter-speed analytics; phono cables and current-mode phono preamps.

Ortofon drops the new Verismo phono cartridge

Ortofon had hoped to introduce its new MC Verismo "in person" at one of last fall's North American shows, but those shows never took place. COVID necessitated instead an October 30 live Facebook introduction, the company's first such premier. The next day, AnalogPlanet posted an exclusive interview with Leif Johannsen, the cartridge's designer and Ortofon's chief officer of acoustics and technology.[1]

Those familiar with Ortofon's MC A95 (reviewed here in May and June 2015) will recognize the new cartridge's "platform shoe" shape, which was created using Selective Laser Melting (SLM) technology to produce a titanium body that's impossible to produce in the same shape and density using standard CNC machining. The Verismo has a very similar shape, but it's bigger than the A95. The new shape also has visual elements reminiscent of the limited-edition MC Century ($12,000).

Like the unlimited-production, top-of-the-line Anna Diamond ($10,499), the new Verismo ($6995) features a diamond cantilever to which is attached a Swiss-manufactured Replicant 100 line-contact stylus shaped to resemble a cutting stylus as closely as possible.

The Verismo's neodymium-based magnet system shares with the MC A95 and the $5159 Windfeld Ti a metal-alloy armature that's less magnetic than standard iron. Ortofon claims that this armature has "almost no" influence on the magnetic field and that it improves dynamics, which makes sense, since the moving part is less bound by magnetic attraction. Ortofon also says the armature's design helps achieve coil-turn precision in each layer, which helps produce lower distortion and channel balance and separation.

Ortofon claims its "Aucurum" gold-plated, 6NX oxygen-free copper coil wire "allows for zero-loss transmission of the diamond's movements via its Diamond cantilever." The system combines low moving mass and high structural rigidity.

In use since 1979, when it was introduced in the MC 20 Mk.II, the "Wide Range Damping System" clamps a small, heavy, "exotic metal" disc between a pair of rubber dampers of differing properties to produce a suspension system that Ortofon claims maintains uniform damping and tracking performance across the full frequency range while lowering distortion and avoiding resonances. Ortofon claims, for the whole system, "the most linear frequency response and the highest upper frequency limit ever" along with 80µm tracking capability at a vertical tracking force of 2.6gm. Ortofon's Verismo video provides excellent computer graphics that show all of this. It's worth watching.[2]

In the video interview, I asked Mr. Johannsen about the Verismo's relatively high 2.6gm tracking force. He said with complete assurance that it was not a problem—that if set correctly it won't harm your precious vinyl. That's been my experience as well with the full range of 2gm-plus Ortofon trackers. With the Verismo, the Ortofon test record confirmed 80µm tracking capabilities.

To optimize the interaction between damping and compliance, the Verismo's suspension utilizes a newly developed rubber compound that incorporates high-efficiency nano-filler multi-walled carbon nanotubes (MWCNT). One of Ortofon's "hedge" businesses—hedging, that is, against the disappearance of vinyl—is developing high-tech elastomers for medical and other industries. I saw this work during a few visits to Ortofon over the past few decades.[3]

With its relatively low 7 ohm internal impedance and 0.2mV output, the Verismo mates well with transformer-coupled and transimpedance-based phono preamplifiers as well as low-noise voltage-amplification–based preamps—all of which I used for this review. Ortofon recommends a 10 ohm load impedance—considerably lower than the traditional 10× internal impedance formula.

Other conservative specs for the 9.5gm cartridge include 25dB channel separation at 1kHz, channel balance within 0.5dB at 1kHz, and frequency response of +2dB/–1dB, 20Hz–20kHz.

The stylus guard on the A90 was diabolical; the one on the A95 was only somewhat less confusing (especially for spatially challenged people like me). Those guards have been replaced here with one that's easy to use and secure. Ortofon recommends using it when not playing records, and I concur, whether or not you have kids, cats, or cleaning people. Why

1 See bit.ly/30hXwG0.
2 See youtu.be/bHZrjnMEpu4.
3 See youtu.be/qZViieA6OAM.

chance it when you're spending $6999 on a fragile phono cartridge?

That price puts the new cartridge $3500 below the Anna D and a bit less than $2000 above the Windfeld Ti, which shares some of the more costly cartridge's features—but not its diamond cantilever. The first diamond-cantilevered cartridge I heard was the Transfiguration Proteus D; the huge upward sonic step from the standard Proteus was immediately obvious. The $8924 boron-cantilevered Anna remains in the line, but it will be retired, I assume sooner rather than later, because in my opinion the new Verismo is more linear, more open, "faster," and more dynamic, though the original Anna is nicely balanced timbrally for classical music. I always like "better for less," and overall I think that's what Verismo offers compared to the boron Anna.

The Verismo combines the Windfeld Ti's attractively airy, transparent, relaxed midrange (something the brand's detractors don't think any Ortofon cartridge produces) with much of the Anna Diamond's precise imaging and spatial generosity. The Verismo's sonic performance, like the price, fit neatly between the Windfeld Ti and the Anna Diamond.

Getting the most from any "severe stylus profile" cartridge requires a great deal of setup care. When you read cartridge reviews, you should know if the reviewer used a digital microscope to set SRA and at least a Fozgometer to set azimuth, or whether they set the arm parallel to the record in both planes and hoped for the best. If you're not a measurer, you're probably okay here, because Ortofon cartridges—especially in the Exclusive series—usually are correctly aligned; I measured and found that to be true with the Verismo. In the video interview, Johannsen says he auditions every cartridge and keeps a photographic record of the measured SRA with the arm parallel to the record surface. That's what you should expect for $7000 and even more so for $10,000+.

Verismo sound

Even before it had much break-in time, the Verismo revealed its basic sonic character to be more similar to that of the Anna Diamond than the Windfeld Ti, with an overall "faster" sound featuring sharper, more finely drawn high-frequency transients yet with a lush and generous midrange and a somewhat tighter, nimbler, better-controlled bottom end—knit together into a coherent sonic package.

Blue Note's Classic Vinyl Series ($24.95) recently released a Trifecta of greats, perfect as a jazz introduction: Kenny Burrell's *Midnight Blue* (ST 84123/3579908), Eric Dolphy's *Out to Lunch!* (ST 84163/3587502), and Herbie Hancock's *Maiden Voyage* (ST 84195/3593196), all cut by Kevin Gray at Cohearent Audio from the original master tapes and pressed on 180gm vinyl at Optimal in Germany.

Burrell's bluesy crowd-pleaser is an enduring classic that seems to become a chart topper with every reissue. This one hit number one on the Acoustic Sounds best-seller list almost immediately upon release, and weeks later sits at number 7. The others (no less great!) are at 16 (Hancock) and 27.

It's the blues groove that grips listeners—but on the opening track of *Midnight Blue*, Ray Barretto's conga, so strikingly and transparently captured by RVG, is an ear-grabber. The tune's every element wins over even the jazz-challenged.

The Verismo gets the "crack" of the conga just right—with plenty of skin following the hit. It's just as right on with drummer Bill English's woody "in your room" rim taps and snare snaps. Any softer on these, and the excitement drains. Major Holley Jr.'s bass has just-right weight, shape, and nimble attack, and Burrell's

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VPI

Prime 21 Turntable With 3D Printed Gimbal Tonearm (Black)

VPI is celebrating 2021 by giving the award winning VPI Prime a facelift and rebranding to the Prime 21. The Prime 21 is not a complete overhaul but more of a refinement based on feedback from customers, dealers, and editorials.

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Gibson Super 400 archtop/Fender amp combo—one of the great guitar sounds on record—has just the right balance of transient attack, clarity, and warm sustain.

Set up properly, you'll never find the Verismo boring—or strident. It sings in a timbrally neutral voice that doesn't call attention to itself. On the finest true stereophonic recordings, the Verismo—like the Anna Diamond—deftly places well-focused, three-dimensional images in a natural-sounding space. For a serious dose of that, try *Yuko Mabuchi Plays Miles Davis* (Yarlung YAR45588/91-171V).

I lavished much attention on Mel Tormé in last month's review of the expensive Analog Relax EX1000 cartridge from Japan—so how'd he fare here? Not quite as velvet a fog—not quite as "jump-in" lush—but velvety and lush enough at less than half the price, and on *Mel Tormé and Friends*, there's more room sound.

Much as with loudspeakers, we're in a cartridge-design renaissance. Modern materials and construction techniques are allowing designers to achieve (if they desire) timbral neutrality, detail resolution heretofore unavailable, and—especially—dynamic contrasts that come closer than ever to delivering the medium's full potential and realistic sound. Enjoy "romantic" sound? The MC Verismo can deliver that, too—*if* it's on the recording.

THE ORB DF-01IA DISC FLATTENER

In my review of the OMA K3 turntable in the October 2021 issue, I noted that a few warped records were impossible to flatten with the 'table's reflex clamp system, rendering them unplayable in the absence of a vacuum hold-down. I promised a review of this device, the Orb DF-01ia disc flattener. I tried an earlier iteration years ago and found it difficult and perilous to use. That's no longer true, and the price is right.

My review sample came from Mockingbird Distribution, an Orb dealer that sells the DF-01ia for $1150—including shipping in the lower 48 states. A $1300 "+" model adds the ability to flatten records that don't have a "groove guard" and includes adapters that make it easier to flatten 7" and 10" records, though the standard version can do those sizes too.

The Orb Disc Flattener successfully flattened the previously unplayable Haim Sisters' *Women in Music Part III* (Columbia 19439748311), a double 45rpm set, and *Monk: Palo Alto* (Impulse B0032181-01); reader feedback indicates that a large proportion of this release was warped.[4] None of these records were

4 I received two warped copies—and no flat ones.**—Jim Austin**

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damaged in any way. Both flattened almost perfectly and both are now playable. My too-warped-to-play copy of Mobile Fidelity's "One Step," double 45rpm edition of *Monk's Dream* was also successfully rescued, as was the Verve/Acoustic Sounds reissue of Oliver Nelson's all-star exercise *The Blues and the Abstract Truth* (Impulse A-5).

The Orb flattener is easy to use. Just open, place the record over the glass plate's spindle, lower and secure the cover, and press a button. The number of times you press controls the final setting. The normal cycle takes two hours of heating and an additional two hours of cooling—all controlled and monitored via a single, square, black push button and seven blue LEDs.

Two semiconductor heater films, one on the top plate and one on the bottom plate, heat only the record's outer edge and center, thus avoiding groove damage. The system carefully controls heat-up and cool-down temperatures.

There are three heat and record size setting options (low, medium, and high heat; 7", 10", and 12" records). Medium heat is the standard setting, with Low suggested for the first try on "rare or precious" discs. High is recommended when medium

doesn't work and you're willing to chance it. LEDs keep you informed about time as the heating and cooling proceeds, and an end-of-cycle alarm and flashing lights let you know it's safe to remove the record.

Some records can't be safely flattened with the Orb, either due to the shape, the vinyl formulation, or something else: Orb recommends not trying to flatten very thin records, records from Sheffield Labs, "Super Analogue" discs, and a few others. But most of your warped records will be flattened without damage by this essential accessory. It's much cheaper than some of the alternatives. Every audio club ought to have one to pass around. Every vinyl fan who can afford it should get their own.

SPEED KILLS

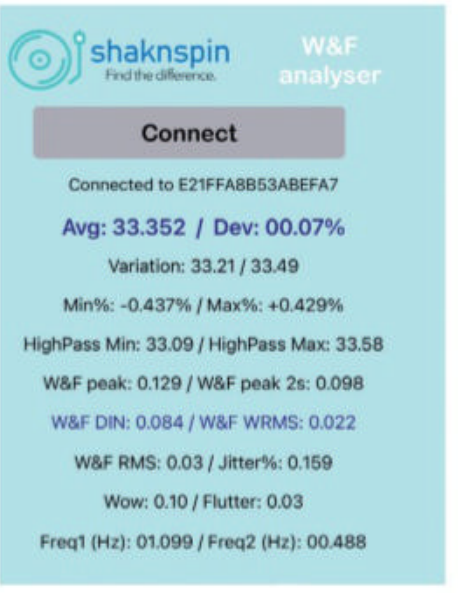
Get ready for some mind-numbing numbers.

After my OMA K3 turntable review was published,[5] I received a text message from SAT's Marc Gomez, who objected (in a nice way) to my statement that the "K3 produced the best overall measurements."

He was right to object. The OMA's mean frequency (for the 3150Hz test tone) was 3150.2Hz. The SAT's was 3149.9Hz. The low-pass measurements show the OMA's maximum relative deviation as –0.01%/+0.03% while the SAT XD-1's was –0.01%/+0.02%. The XD-1 was better by 0.01%. In absolute terms, the OMA's filtered measurement was –0.6Hz/+1.0Hz while the SAT's was –0.5Hz/+0.7Hz.

In other words, while the differences were minuscule, I erred when I wrote that the K3's measurements were better. My mathlexia is no excuse.

Shaknspin contains a 9-degrees-of-freedom sensor that measures rotational platter speed 500 times per second. The 100gm device is best placed directly adjacent to the spindle to keep the mass as close as possible to the platter center. There's now an iPhone app that (for me) makes it easy to download the collected data and present it neatly. Here are the shaknspin results



for the OMA and SAT turntables (above). It's a near dead-heat, but the SAT's results are *slightly* better. Note how close the wow and flutter (W/F) measurements are: The OMA's W/F is 0.12/0.03. The SATs is 0.10/0.03. So the SAT's are *slightly* better. Not that you'd notice.

Now look at the jitter percentage, which is the average of the speed variations per second presented as a percentage of the average speed. It's how much correcting and adjusting the electronics have to do to maintain the correct speed. Here, the OMA's measurement—0.152—is *slightly* better than the SAT's measurement: 0.159. Otherwise, the SAT's measurements are *slightly* better overall, but I'd bet both are within the margin of measurement error (whatever that might be here). Anyway, these measurements are not likely to be sonic predictors, as the differences, even if they're real, are almost certainly too small to detect.

The shaknspin app also provides, in an Excel spreadsheet, a "speed run" that gives about 4000 individual speed measurements in an 8-second run. It'll dizzy your head!

I decided to take a fresh set of Platter-speed measurements now that both turntables have been spinning for longer than when I first measured. I was careful to use the same test record (I have a few samples of the 7" Feickert disc) and to start from the beginning of the side. I also placed the phone (with the app on it) in the same place. Both graphs show "bumpy rides"—measurements that look far worse than the

5 See bit.ly/3BLmyvg.

ones I originally took and published. I repeated both twice and got the same results. In this series, the OMA's measurements were slightly better (absolute filtered deviation –0.6Hz/+1.0Hz) than the SAT's: –0.9Hz/+0.9Hz.

And then ...

A text message from Mr. Gomez and *yet another* set of measurements proved the fallibility of these Platterspeed results—that they should not be taken too seriously. I still think they're useful, but not everyone agrees: One manufacturer whose products I've given uniformly positive reviews to for more than 20 years refuses to offer any of his newest turntables because I use the Platterspeed app.

A day or so after his first text, Gomez texted again, giving me instructions on how to enter "service mode" to calibrate the XD-1's motor controller, which is similar to the one used in the Technics SP-10R. The purpose, he said, is to compensate for the optional vacuum platter's extra weight (a total weight of 33lb). Pressing and holding buttons causes the platter to spin at 100rpm for a few minutes, after which it reverts to 33⅓ then stops. It takes about two minutes.

General	General
mean frequency	mean frequency
3149.6 Hz	3149.8 Hz
Raw Frequency	**Raw Frequency**
max deviation (relative)	max deviation (relative)
-0.62% / +0.26%	-0.55% / +0.31%
max deviation (absolute)	max deviation (absolute)
-19.4 Hz / +8.1 Hz	-17.3 Hz / +9.7 Hz
Lowpass-filtered Frequency	**Lowpass-filtered Frequency**
max deviation (relative)	max deviation (relative)
-0.03% / +0.01%	-0.03% / +0.03%
max deviation (absolute)	max deviation (absolute)
-0.9 Hz / +0.4 Hz	-0.9 Hz / +0.9 Hz

SAT Platterspeed measurements before (left) and after "recalibration."

Before doing this, I played a few records with the Lyra Etna λ Lambda SL installed on the CF1-09Ti arm. The 'table sounded great, as described in the XD-1 review. Then I performed the calibration.

It was like giving the XD-1 a laxative. The improvement was not subtle: more liquidity, more transient precision, more spaciousness, and a greater sense of effortlessness. The test selection was "Stolen Moments" from the Acoustic Sounds/Verve series reissue of Oliver Nelson's *The Blues and the Abstract Truth* (Impulse A-5) featuring Evans, Chambers, Haynes, Dolphy, and Hubbard—no first names needed for those players.

Can this audible improvement be measured? Apparently not, because after the treatment, the SAT 'table measured somewhat worse than before. But it sounded better. *Way* better.

This calibration suggestion arrived almost a year after the SAT review was published. I asked Mr. Gomez when he discovered it himself. "This morning," he said. Better late than never.

A QUICK CABLE COMPARISON

Speaking of measurements and audible improvements: Back in 2017, I posted tonearm cable files on AnalogPlanet[6] and asked readers to choose their favorites. I ran a similar test last May.[7] The sonic differences were obvious; they even included level changes. Some readers asked that the levels be normalized—but if the only variable is the cable swap, why would I alter the levels?

Earlier this week, I decided to do another cable test, this time with two phono cables: My Kuzma 4Point has a hard-wired connection from the cartridge pins to the RCA jacks. It also has an RCA-equipped junction box. Obviously, you can't use both simultaneously. The other cable was the RSX Beyond ($3150 for a 1m length).

RSX was founded recently by XLO founder Roger Skoff. The top-of-the-line "Beyond" is fully shielded, double-grounded, and features "long crystal, ultra-pure Laboratory Grade copper," "Teflon variant-plus-air" dielectric, and ultralow-mass terminations, which are said to minimize self-inductance. The RSX line includes two other lower priced phono cables.

I played "Stolen Moments" from my newly flattened sample of the AP reissue of *The Blues and the Abstract Truth*, first with the hard-wired cables and then using the RSX cables via the junction box. I didn't change anything but the cables.

The result was surprising: With the Beyond cables, the music was louder—yes, louder.[8] *Significantly* louder. To check that impression, I made a recording of the track with both cables and sent it to Editor Jim Austin; he looked at it in Adobe Audition. Then I repeated the measurement. According to Adobe Audition, the difference in volume was about 3.5 LUFS (Loudness Units Full Scale), essentially the same as 3.5dB. The difference was the same in both channels.

How can a phono cable make music

6 See bit.ly/3lFGs56.

7 See analogplanet.com/content/its-just-wire-1.

8 I asked Mikey to record and send me the two test tracks. And then I asked him to do it again. And again. Each time, it came back the same: The recording made with the RSX cable was roughly 3.5 LUFS louder than the recording made with the hard-wired cable according to analytics in Adobe Audition. Both channels were affected equally.

louder? I consulted Jim Austin, who consulted Technical Editor John Atkinson. JA hit on the answer. The phono preamp was my CH Precision P1, and I was using it in current mode. Apparently, the RSX cable has a significantly lower resistance than the second run of Kuzma wire—and the cable resistance isn't tiny compared to the internal resistance of the phono cartridge. Less resistance, with the same electromotive force induced in the cartridge, means more current flows in the phono-cartridge loop. More current in the phono loop means more voltage from the phono preamp.

To check this explanation, I did the same test again using the voltage-mode inputs on the phono preamp instead of the current-mode inputs. The Beyond cable still measured louder, but now the difference was very small—just 0.16 LUFS. I doubt many people could hear that.

Once I'd matched levels, I still heard a big difference. The sound was more open. Instrumental timbres remained the same. The reverb behind the instruments was presented in greater relief, and the soundstage widened, with more air. Even the late Arnie Krueger would hear this.

One caution: The limited distance between the RCA plugs will make these cables incompatible with phono preamps with widely spaced input jacks.

I auditioned RSX's best power cords on the darTZeel amps a while back, and they produced a softer, less focused sound than the much more expensive AudioQuest Dragons. But in my system, the RSX Beyond phono cable produced a big improvement. They're well-shielded, too. This superlow-voltage link is among the most critical in an analog-centric hi-fi system.

Now that the electricity here has been optimized and the ground-hum issues are gone, I'm in a low-level cable swap mood—so expect more discussion about cables in future columns. I make no apologies. ■

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GRAMOPHONE DREAMS

BY HERB REICHERT

THIS ISSUE: Electrostatic headphones from a planar-magnetic headphone maker, and a flagship headphone amplifier from Woo Audio.

The new ultra-fi

At noon on a cloudless, ridiculously bright 97° day, John Atkinson and I auditioned Audeze's new-but-not-yet-released CRBN electrostatic headphones. The audition took place at a sneak preview hosted by Audeze's principal, Sankar Thiagasamudram, in a sleeping room at New York's hipster-chic Ace Hotel on 29th Street and Broadway. Décor in this unusual sleeping room included a bathtub with feet, an antique wood ironing board, a vintage Gibson guitar, and a working stereo system with a Music Hall turntable and an assortment of vintage LPs.

On my way there, I was remembering some of my lifetime experiences with electrostatic transducers. People who know me know that I've always been partial to electrostatic loudspeakers and headphones, but I've never found any that engage me full-time, long-term. Over the years, my two pairs of Quad ESL loudspeakers taught me to enjoy the pleasures of a scintillating, perfectly detailed midrange. The original MartinLogan CLS (not the II or IIA) and the Stax ELS F-81 electrostatics took that learning to a higher level: Both speakers thrilled me with their raw, succulent, ultradetailed presentation. Unfortunately, both tended toward odd or gone-missing bottom octaves. Worst of all, they were beamy. And compressed. And staticky. But I loved them anyway.

Likewise, I've been drawn to Stax's SR-009 headphones. I've always wanted to love them, but I found the original 009 unsatisfying for daily use. I regard the current SR-009S, which makes proper bass, as one of the most revealing, exciting-to-use headphones of all time.

What I am trying to say is: I've been thrilled forever by the quick, vivid beauty of electrostatic transducers, but sooner than later they start sounding like electrostatic transducers. At that point, I go back to the easier flow of dynamic and planar-magnetic headphones and continue my persistent kinships with horn speakers, planar-magnetic panel speakers, full-range speakers on open baffles, and of course my beloved LS3/5a sealed boxes.

I am telling you this because that day at the Ace Hotel I thought the Audeze CRBN electrostatic headphones sounded fresh, open, clean, and abundantly resolved—but more electrostatic and less chunky, weighty, and tone-saturated than I had hoped for. But I wasn't worried: I blamed the CRBN's low chunk factor on the Chord Qutest DAC that was sourcing Linear Tube Audio's Z10e amplifier. I know the Qutest and LTA's Z10e from time spent auditioning them for my own reports in this magazine. The Z10e is likely blameless because previously it made the Stax SR-009S, HiFiMan's Jade II, and Dan Clark's VOCE electrostats sound smooth, naturally *full-bodied*, and vivacious. When I put the Qutest in my big system, *it* sounds smooth and vivacious, too—even elegant—but, I think, a little thin and gray of tone: not hard-bodied and full-textured like my much more expensive reference DACs: the dCS Bartok, HoloAudio May, and the Mola Mola Tambaqui.

As I was leaving that Ace Hotel audition, I arranged to review the CRBN headphones using Linear Tube Audio's Z10e. Besides powering electrostatic headsets, the Z10e can power conventional dynamic and planar-magnetic headphones as well as regular loudspeakers.[1]

And then, a week later, I found out that Sankar and crew had used Woo Audio's 3ES electrostatic headphone amp during the development of the CRBN headphones. I had no choice but to call Woo Audio's proprietor, Jack Wu, requesting a 3ES for my Audeze examinations.

Jack hand-delivered the 3ES one day after the CRBN arrived. As I unpacked the well-packed Woo amp, I spotted its three line-level input pairs on the back (two XLR, one RCA) and their corresponding three-position source-selector knob on the right side of the front panel. Left of the centrally located big knob, which controls the TKD four-channel balanced potentiometer, I spotted the Headphones/Preamp selector knob and my brain exclaimed, "Oh look! It really *is* a preamp." When I asked Jack Wu about the 3ES's circuit, he told me (on the phone) that it was a fully balanced 6SN7 dual-triode differential input, capacitor-coupled to a push-pull 300B directly heated power triode output. The 300B's cathodes are capacitor-coupled to the 3ES's balanced XLR outputs. (The

1 See stereophile.com/content/gramophone-dreams-36-linear-tube-audio-z10e-integrated-amplifier.

PHOTO: WOO AUDIO

3ES has no single-ended outputs.)

Line-level tube envy

To make sure everybody understands how spectacularly *not* ordinary this Woo Audio amplifier is, let me restate and clarify what I described above: Besides being a dedicated electrostatic headphone amplifier (with five-pin "Pro" 580V-bias energizing supply that works with headphones from Stax, Dan Clark, and HiFiMan), the Woo Audio 3ES is also a two-chassis, 53lb stereo *preamplifier* in which the lower, shielded power supply chassis sits on what appear to be premium-quality footers and is fastened to the amplifier-circuit chassis on top via spacers that match the footers on the chassis bottom.

The top of the top chassis displays the 3ES's quartet (two per channel) of push-pull 300B output tubes. I am auditioning the Standard version, the price of which is $7649. The Standard-version tube lineup is four Psvane 300B directly heated triodes, two Russian-made 6SN7 dual triodes, and a single (Russian) 5U4G rectifier tube. Without tubes, the 3ES measures 17.75" × 7.25" × 13.5". Woo also offers an Elite edition, which costs $11,699 and includes Mundorf Supreme Silver/Gold audio capacitors, single-crystal copper hookup and signal wire, an Alps RK50 four-channel volume control in a brass enclosure, and Cardas Audio XLR and WBT RCA connectors.

To install the 3ES, I simply replaced my reference Rogue Audio RP-7 preamp with the 3ES. The system then featured the dCS Bartók DAC driving the Woo pre via balanced Cardas Clear Cygnus interconnects. Sutherland Engineering's Little Loco phono stage was connected to the 3ES via single-ended Black Cat Coppertone wires. In turn, the Woo preamp drove the balanced inputs of the Parasound Halo A21+ power amplifier via AudioQuest Mackenzie balanced interconnects.

From the first track I played, that whole shebang motivated my Falcon LS3/5a Gold Badges in a way that I did not anticipate: With the 3ES, the sounds charging my room exhibited a greater *force and physicality* than they did with the RP-7 preamp.

PHOTO: WOO AUDIO

It was an eyebrow-raising moment.

Last month, during my Mola Mola Tambaqui excitements, I discovered how fresh and Windex-clear the dCS Bartók and Tambaqui DACs sounded driving my Elekit and Parasound amps *directly*, with no Rogue RP-7 in between. Both DACs showcase volume controls that do not appear to color the sound, and both DACs' output/buffer driver stages supplied enough gain and current capability to keep the sound crisp and vital.

But now, with the Woo 3ES preamp in the system, the character of sound changed, becoming more spirited, more physical, more locomotive-rolling-forward than it was previously, with or without the Rogue RP-7.

To my delight, this new force and density was accompanied by a bright, 300B-fashioned clarity that made my reference preamp seem a tad shadowy. To my further delight, this extra brilliance and physicality was apparent even at the lowest late-night volumes.

The reason I listen to so many simply miked field recordings (by Alan Lomax or David Lewiston for example[2]) is that they make it easy for me to imagine the in-the-air energy of a live voice or instrument positioned in front of a single microphone. While I listen to this type of recording, I can ask myself, does the quality and intensity of the sound energy coming out of my speakers resemble that of the energy I *imagine* went into the microphone?

One of the best records I have for making this energy-in/energy-out comparison is *Roscoe Holcomb/The High Lonesome Sound* (Folkways LP FA 2368). On my preferred, simple LP-based sound systems, Roscoe's otherworldly voice and close-miked banjo come out sounding a lot like I imagine they did while the recording was being made. Western Electric engineers called this phenomenon "Mirrophonic": "A True Reproduction of the Original."

Speaking of Western Electric: I recently heard that *High Lonesome* disc on a 10'-tall, five-way horn-speaker system with a $350k record player. That million-dollar system made Roscoe's voice and banjo image larger than real life—I call this "cinema-sized"—but knock me over if Roscoe didn't sound like a real live person timbre-, density-, and intensity-wise.

When I came home from that bighorn experience, I played that *High Lonesome* disc with the Koetsu Rosewood Signature Platinum moving coil driving Sutherland Engineering's Little Loco phono stage into the Woo 3ES, with the Parasound Halo A21+ powering my 1-foot-tall Falcons. Dang me to hell if Roscoe was not almost as dense, intense, and live-like as he was with the large horns. (He was smaller though, maybe $^{2}/_{3}$ life-size.)

Used as a traditional preamp, the 3ES enhanced my system by presenting recordings with an extra-brilliant, extra-radiant transparency and a density and intensity of projected energy that exceeded that of my reference Rogue RP-7—and any other line-level amplifier I can remember using. Oh, and by the way, this extraordinary Woo Audio preamp also amplifies electrostatic headphones.

What about Audeze's CRBN headphones?

In 2016, Audeze was approached by researchers at the UCLA Semel Institute for Neuroscience and Human Behavior along with the industrial designers at BoomBang for help designing a headphone to be used by patients while they are *inside* MRI machines. When Sankar first told me about this "CRBN project," I told him how the first time I had an MRI I freaked—had a panic attack—and tried to escape and run from the room. The nurse/operator stopped me at the door and comforted me.

2 See rootsworld.com/interview/lewiston.html.

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She told me panic attacks were not uncommon and then urged me to try again. Which I did—but only to impress her with my courage. I told Sankar if he pulled this project off, he would be deified.

As many of us know, MRI machines expose patients to high-power electromagnetic fields. When operating, MRI machines sound like buckets of angry bolts slamming against the steel drum of a washing machine. The design brief for the Audeze headphones included noise-canceling and a microphone for patient-operator communication. Most important of all, the headphone and its cables must be invisible to the scanner. Audeze's engineers replaced the headphone's wires with carbon fiber and developed a new polymer film diaphragm that eliminates the use of ferrous or metallic coatings by embedding carbon nanotubes (SWCNT) within the thin film.

Audeze Audio is world-famous for making audiophile-grade planar-magnetic headphones, but this MRI research yielded two new *electrostatic* headphones, both called "CRBN." One is for MRI and uses a 1kV bias; a second, for audiophile use, operates at 580V bias and is fully compatible with all Stax "Pro" five-pin energizer systems. The CRBN I am reporting on costs $4500 (without power supply).

The name "CRBN" is pronounced "carbon"; it alludes to Audeze's new 90mm × 120mm "uncoated" polymer film electrostatic diaphragm infused with the abovementioned carbon nanotubes. According to Audeze's website, the charge on the nano-tubed diaphragm "is evenly distributed throughout the film; resulting in a uniform driving force that reduces distortion and improves clarity, resolution, and transparency."

These nanotubed diaphragms are fastened in elegant, oval, open-backed housings made from magnesium, stainless steel,[3] and polymer acetate. The headband is carbon fiber and leather. Best of all, the CRBN weighs only 300gm, which is extremely light compared, for example, to Audeze's open-back planar-magnetic Audeze LCD-3, which weighs 635gm, or the Stax SR-009S, which weighs 590gm.

Listening with CRBN

It took me a week to stop bathing in the mesmeric forces proffered by the Woo Audio preamp. When I did, I encountered a second wonder: With the Woo Audio 3ES's electrostatic headphone amp, sourced by the Mola Mola Tambaqui DAC, Audeze's new CRBN headphone did not sound like any electrostatic headphone I'd ever heard before, including the CRBN I auditioned at the Ace Hotel.

Together, these traits produced a neutral, natural, high-detail, low-fatigue, listener-friendly headphone experience.

My initial Mola/Woo/CRBN impressions suggested a slightly crisper-sounding HiFiMan Susvara. The CRBN resolved deep into the recording like the open-back planar-magnetic Susvara, and like JPS Labs' Abyss AB-1266 Phi TC, but the music that now came out of the CRBN was more brightly lit and sharply focused than it is with those venerable magnifiers. With the Audeze, sounds were exquisitely formed, distinctly visual, and exceptionally three-dimensional. They were also slightly less physical and present than I was expecting from the Tambaqui DAC and Woo Audio 3ES amp, both of which specialize in solid, muscular sound.

As you may have noticed, I enjoy noticing the *sound* of sound. I especially like it when the sounds I'm listening to are artful *notes* from John Fahey's guitar. Fahey's notes are provocative *enough* when I stream them from my iPhone; through the CRBN with the Tambaqui DAC and 3ES amplifier, they became transcendent. With the CRBN, every track on Fahey's Henry Kaiser–produced *On Air* (16/44.1 FLAC, Tradition & Moderne/Tidal) came through sounding beautiful and surrealistic. Fahey's pacing was pure poetry. *On Air*, which was recorded for Radio Bremen, Germany, in 1978, features Fahey doing his best to let the dark dreams inside his mind dance with the dark fears floating in mine. The 3ES/CRBN pairing did an unusually effective job of facilitating that level of artist-to-listener connectedness.

After John Fahey, I got on a Hank Williams kick, playing through everything on Tidal and Qobuz and ending up, as always, on *I Saw the Light (Expanded Edition)* (16/44.1 FLAC Mercury/Tidal). During these Hank moments, I realized that the Audeze CRBN somehow avoids that right-ear/left-ear overemphasis that characterizes virtually all "unprocessed" headphone listening. Somehow with the CRBN, mono recordings, including all this Hank Williams, presented themselves almost completely outside of my head and mostly in front of my face. Similarly, the CRBN presented stereo recordings as—more than usual—one continuous soundfield, without a hole in the middle.

Besides the coherence of its mono and stereo soundspaces, the Audeze CRBN distinguished itself by its understated clar-

3 Presumably, the version of the CRBN used inside the MRI machines uses a different housing material, since stainless steel is a ferrous metal.

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ity and lack of electrostatic-ness. Together, these traits produced a neutral, natural, high-detail, low-fatigue, listener-friendly headphone experience.

3ES via LTA Z10e

After several weeks of 3ES and CRBN auditions, I replaced the Woo and Parasound amplifiers with Linear Tube Audio's Z10e integrated. Like the 3ES, LTA's Z10e is built in two chassis (one for the power supply, the other for the audio signal) and uses a David Berning–designed ZOTL10 power amplifier and preamplifier to drive electrostatic headphones, planar-magnetic and dynamic headphones, or loudspeakers. The Z10e costs $6950 and is specified to output 12W into 8 ohms and 13W into 4 ohms.[4] In my system, the Z10e plays the 15 ohm Falcon Gold Badges and the 10 ohm DeVore Fidelity Orangutan O/93s with an easy-flowing natural beauty, surprising muscle, and a spirited élan.

I began my Z10e listening with the speaker amp driving the Falcons while repeat-playing two of my current piano-playlist favorites: the tracks "Ode" and "Chant" from German composer Nils Frahm's 2015 album *Solo* (24/96 FLAC, Erased Tapes/Qobuz). Frahm recorded this 42-minute single-take improvisation on a David Klavins–built Model 370 piano, which is located in Tübingen, Germany. If, like me, you're a fan of rich, endless reverb tails and deep, low-toned pedal sustains, this 370cm (about 12') high, 1.8-ton piano has 10' strings on a massive, floorstanding soundboard that adds depth and dimension to every note.

With the Z10e, Nils Frahm's "heavy" notes entered my room in a languorous, sensuous manner, lingered for close examination, then exited slowly and gracefully. It was a high audio-pleasure moment.

When I plugged the Audeze CRBN electrostatic headphones into the LTA Z10e, the extreme reverberance of Nils Frahm's "Chant" sounded more damped than it did with the Falcons or when driven by the 3ES. Low bass notes were distinctly tighter, but they also sounded less expansive. The Z10e + CRBN made reverb tails seem *a little* shorter and harmonic expansions *a mite* curtailed. But overall, timbre and tone were just right and satisfyingly color-saturated; the Z10e gave every recording a straight-up, plain-truth beauty that was very easy on my ears.

For an interesting comparison, I used the Z10e's "HI" output, which is intended for difficult-to-drive regular headphones, to power HiFiMan's 83dB/mW, 60 ohm Susvara open-back planar magnetics. On that above-mentioned duo of bass-dense Frahm performances, I was soothed and delighted by the Susvara's extreme transparency and dynamic ease and how it exposed layer upon layer of expanding harmonics. Compared to the slightly light CRBN + Z10e bass, bass with Susvara + Z10e was vaster, deeper, and, on Frahm's album *Solo*, delectably large.

If it is true that, as I said, the CRBN + Z10e presents recordings with a "plain-truth beauty," then I'd have to say HiFiMan's more expensive Susvara conveys those same recordings with a "high-grade-LSD" form of beauty.

In my view

The Woo Audio 3ES preamplifier/electrostatic headphone amplifier and Audeze's new CRBN electrostatic headphones are extraordinary products that, while high up on the price scale, are also up there among the most exciting, smartly engineered audio components I've encountered at any price.

My verdict: Get thee to a CanJam or audiofest and find out if my observations jibe with your impressions. ■

4 See lineartubeaudio.com/products/z10e-electrostatic-headphone-amp-integrated-amp.

MICHAEL FREMER

Acoustic Signature Montana NEO

TURNTABLE

You may be moving to Montana.

Acoustic Signature is not an overnight sensation, nor are its turntables driven by dental floss. If you're not a Frank Zappa fan, you probably have no idea what any of that means, so please Google it. I'll wait till you get back.

The German company is headquartered in picturesque Süssen not far from Stuttgart, one of the country's automobile capitals. Porsche and Mercedes-Benz are headquartered there. It has been around for 25 years, specializing in exquisitely machined, high-mass, nonsuspended turntable designs, manufactured in-house. With companies moving to electric cars, you can be sure that, should the company need any, there's no shortage of superskilled machinists in the picturesque valley known as the "Stuttgart Cauldron."

The Acoustic Signature turntable line has expanded over the years, bottom to top, from moderately priced high-performance turntables some can afford to luxury models only a few can afford. There's also a lineup of similarly priced tonearms. The company has long manufactured reasonably priced turntables—at least by high-performance standards—but none that fall into the "budget" category.

A few months before the pandemic shut down the world, I visited the tidy, well-organized factory. The company's loading dock/recycling area is cleaner than some factories I've been in. I came away mightily impressed by the operation, which includes state-of-the-art CNC machinery and cosmetic metal-lapping surface-finishing devices, all operated by a talented team of engineers, technicians, and skilled craftspeople. I saw engineers designing A-S's next product generation using the latest CAD software. The 21 employees work in the kind of well-organized factory you'd expect to find in Germany.

Also on the premises is a showroom/listening room sure to wow international distributors and members of the press. All the company's products are on display and can be auditioned. After the visit, I concluded that Acoustic Signature—a company that offers a 15-year warranty on all of its products—is one of the companies most likely to still be around in 15 years to honor that warranty. If you can take the factory tour here, you'll also see LEGO bricks used most ingeniously.[1]

More recently, Acoustic Signature launched an updated product lineup under the NEO umbrella, with turntable prices starting at $4595 for the Maximus NEO. Add the least costly arm in the line, the $2295 TA-1000 NEO, and you're looking at $6890 for the company's base offering. In other words, the company cedes the low-end market to others while reaching for the heights with a top tonearm price of $29,995 for the TA-9000 NEO and a top turntable price of $189,995 for the Invictus NEO.

The Acoustic Signature Ascona I reviewed some years ago—a stalwart on our Recommended Components list before it "aged out"—has been replaced in the A-S lineup by the $48,995 Ascona NEO.

I found the original Ascona overdamped to the point of sounding kind of dead, and that's what I reported. To his credit, Founder and Chief Engineer Gunther Frohnhöfer went back, made some modifications, and released a much more alive- and open-sounding Mk2 edition. That's one of the reasons I admire and respect him, unlike some other manufacturers who respond to criticism by pouting, screaming, or refusing to ever again provide products for review.

The Montana NEO and the $17,995 TA-7000 NEO tonearm

The Montana NEO ($30,995) is a new model; it was shown to me two years ago during that factory visit I made in preparation for the product launch and this review, but of course the pandemic interrupted both. The Montana is in the middle of Acoustic Signature's eight-turntable line, with three models priced higher and four priced lower. The TA-7000 NEO ($17,995) is second from the top of the five-tonearm lineup.

Montana is a compact, ingeniously designed, superbly machined, precision-built turntable that puts belts and motors out of

1 See youtu.be/XS7fh4lnLa4.

SPECIFICATIONS

Description Montana NEO: Nonsuspended, mass-loaded, triple-belt-driven turntable. Speeds: 33.3rpm, 45rpm. Platter: 12.2" (310mm) diameter, 1.97" (50mm) thick. 3 AC synchronous motors. Wow and flutter: not specified. TA-7000 NEO: Ball-race bearing, carbon fiber, pivoted tonearm. Effective length: 239.9mm; pivot-to-spindle distance: 222mm; overhang: 17.3mm; offset angle: 23.9°. Effective mass: 10gm. Weight: 683gm.
Dimensions Montana NEO: 16.8" (426mm) × 16.8" (426mm) × 6.77" (172mm).
Weight: 79lb (36kg).
Finish Black or silver anodized or bicolor.
Serial number of unit reviewed Montana NEO: A21-05-020; TA-7000: TA-2450. Manufactured in Germany.
Price Montana NEO: $30,995. TA-7000 NEO: $17,995. Approximate number of dealers: 15. Warranty: 15 years.
Manufacturer
Acoustic-Signature
Made by AS-Distribution
GmbH Hillenbrandstrasse 10,
D-73079 Süssen, Germany.
Web: acoustic-signature.com.
US distributor:
Rutherford Audio
14 Inverness Drive East,
Unit G-108
Englewood, CO 80112.
Tel: (888) 279-6765.
Email: info@rutherfordaudio.com.
Web: rutherfordaudio.com.

ERIC SWANSON

sight and touch, leaving visible only the spinning platter, the tonearm, and the outboard power supply that connects to the plinth via red and blue Ethernet-type cables. While the appearance is that of a classic "four-poster," the approximately 17" × 17" × 2.5", constrained-layer damped, 55lb aluminum-alloy chassis sits on three hefty, knurled, height-adjustable, gel-damped feet, bringing the chassis height to approximately 4".

The 12.2"-diameter, anodized-aluminum platter is festooned with 24 of Acoustic Signature's polished-brass, vibration-absorbing "silencers," which may look like buttons or wafers but in fact run the full depth of the platter; the platter adds 24lb to the assemblage's weight and 3" to its height. That's 79lb concentrated in a relatively small footprint. The efficacy of those silencers is detailed in measurements found on the company's website.

In addition to the constrained layer–damped chassis and brass silencers, A-S innovated another vibration-canceling system it calls Automatic Vibration Control (AVC), which combines hardware and software to control the Montana's three 24-pole, two-coil AC motors.

Conventional wisdom (mine) says that, compared to a single motor drive, three motors equals three times the noise and vibration produced by a single motor, exacerbated because motors, pulleys, and belts are manufactured to tolerances too high to produce 100%-synced performance. A-S counters by acknowledging the motor-to-motor production tolerance problem: "Unfortunately all AC synchronous motors show production-related tolerances that prevent the poles and coils from being positioned one hundred percent correctly—a key reason for unwanted vibrations. In order to effectively minimize or even avoid these, all production tolerances must be compensated by other means."

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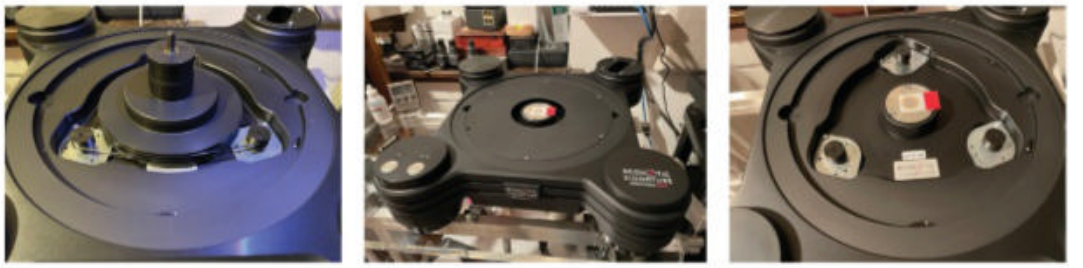
"Other means" means AVC. Acoustic Signature avers that AVC measures those distortions in real time and adjusts intra-motor phase shifts to cancel them out. In A-S's words, these measures "ensure a drastic reduction of the vibrations." Can't do that with just one motor, and can't do it as well with just two. The Montana incorporates level-3 AVC, the company's most sophisticated, which in addition to the software-based correction includes specially selected and paired motors. The speed (33.3rpm and 45rpm) is adjustable via the outboard motor controller.



Putting it together

Efficiently and logically packed, the Montana can be unpacked and assembled by one person with relative ease—at least if you're at all experienced doing this, can follow good instructions, and are not a wimp. (You *can* be elderly, at least as defined by time.)

Once the chassis is in place, you remove a series of small bolts securing a top plate. Under that you'll see the three motors and the bearing opening; into that, you insert the massive subplatter/spindle-bearing assembly. The latter is diamond coated (Dura Turn Diamond Bearing, acronym DTD). A trio of precision-ground, small-diameter belts go around the motor pulleys and subplatter in a specified order, with each belt going around two motor pulleys. The job is made easier by full-color instructions (although the belts of course are black). Replace and bolt the cover plate, and you won't need to see or touch belts or pulleys for many years, and the belts will not get fouled by dirt, dust, or oily fingers.

Next, you *carefully* lower the platter onto the subplatter, making sure it doesn't drop in place. Put the thin leather mat in place and arrange it so that the silencers line up with the mat's holes. Level the chassis, and you're ready to install the tonearm.

The TA-7000 NEO tonearm

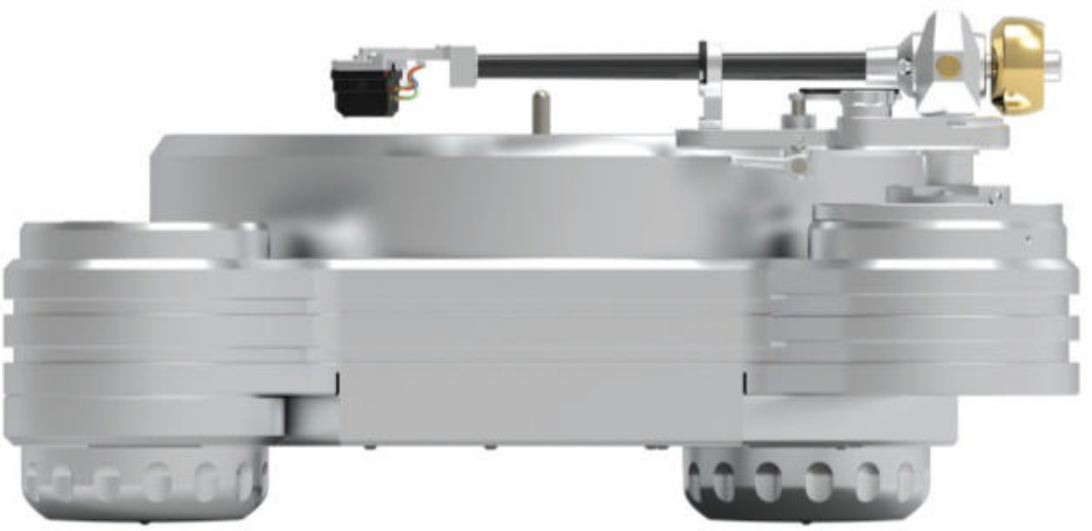
Two arms up to 12" long can be fitted to the Montana, which feature a pair of sliding, integrated arm mounts. Going from the standard 9" to the 12" mount requires loosening a pair of chassis-mounted set screws on the underside and then sliding out the mount to the extended position. Simple.

A-S supplies an armboard cut for your arm of choice as part of the purchase price. The second rear mount comes as a solid disc that the company will replace (for a fee) with an armboard cut to accommodate your chosen arm's mounting system.

A-S supplies the TA-7000 NEO with either an SME or Rega-type mount. The supplied SME mount is the familiar oval opening into which is bolted a cylindrical collar, set to the correct pivot-to-spindle distance, which accepts the arm's pillar. The TA-7000 is available in 9" and 12" versions. A-S supplied the 9" model, which conforms to the standard Rega geometry: 222mm pivot-to-spindle distance and 239.3mm effective length.

The hall caressed but never enveloped or buried the piano.

Locking and unlocking the collar-fixing screw and manually raising or lowering the pillar, which is unmarked for height, sets VTA/SRA. It's basic but super-rigid and the machining tolerances feel extremely precise: The pillar goes, in a hair-turn of the grub screw, from rock-solid secure to dropping like a pound and a half rock, so it pays to be cautious. (The extremely detailed, well-written manual says, "Be aware, that when opening the VTA locking screw, the arm might fall down." "Might"? Like London Bridge, it will!)



Azimuth can be adjusted by loosening a locking screw in the bearing collar and rotating the arm-tube—but again there are no reference marks, which makes repeatable settings difficult.

The arm's gimbaled ball/race bearing system is secured within a high-mass collar into which fits a uniform-diameter carbon fiber tube damped with a 3D-printed insert (though it was still "lively" to the tap and transmitted more "tap" to the speakers than

expected).

The gold-plated brass counterweight rotates on a fine-pitch–threaded stub and locks to it via a trio of set screws. If it's needed, A-S supplies an auxiliary bolt-on counterweight that allows the arm to handle cartridges weighing 4–16gm.

Silver internal arm wire terminates in a DIN jack at the base of the arm pillar. A-S supplies AudioQuest's entry-level "Wildcat" "Perfect Surface" copper DIN-to-RCA cable ($119.95)—which makes sense since people will want to be able to play the Montana immediately, and yet most end-users will want to make their own, more costly choice. Also supplied is a rigid, precise alignment jig set to Löfgren A geometry (66mm and 121mm null points; my fave), though it's not identified as such in the instructions, which, like the careful packaging, are well organized and commensurate with the arm's price.

Measuring

If you read this month's Analog Corner column, you might skip this section or briefly peruse it and chuckle. If measurements are the guide, just get a CD player and be done with it. To reiterate what I wrote in the column, these measurements are mainly for entertainment purposes, although I think they are still "baseline" useful.

Using the Platterspeed app, the Montana's *absolute* raw-frequency deviation (right) was bettered by the direct drive turntables (the SAT XD1 and the OMA K3), but the Montana NEO bettered *both* of the far more costly direct drives on the low-pass–filtered measurements, though by infinitesimal amounts.

The shaknspin measurements show significantly more average speed deviation for the Montana (0.34%) than in either the OMA (0.08%) or SAT (0.07%) 'tables. The other numbers were mostly a wash, with differences in the 0.001% range one way or the other.

What counts most is how the Acoustic Signature turntable *sounds* and not how it *measures*—right? Louder! I can't hear you!

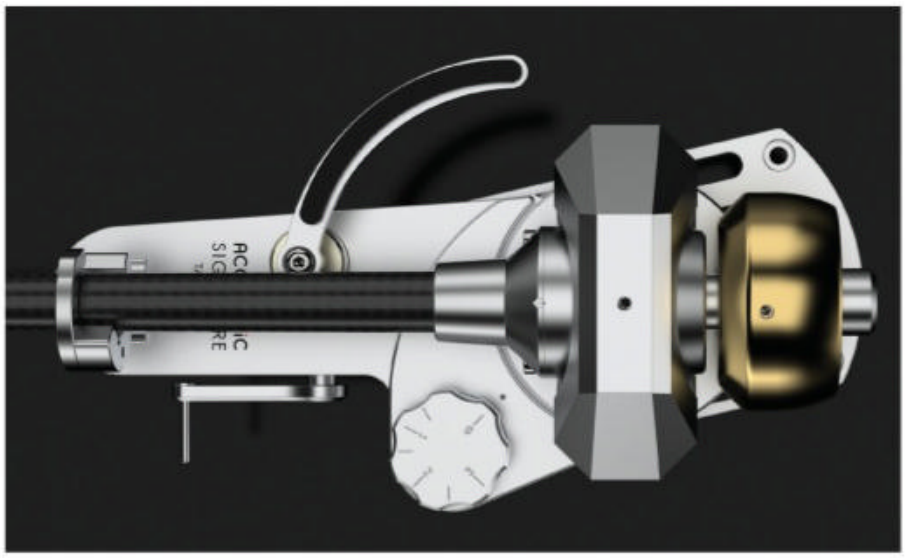
Listening

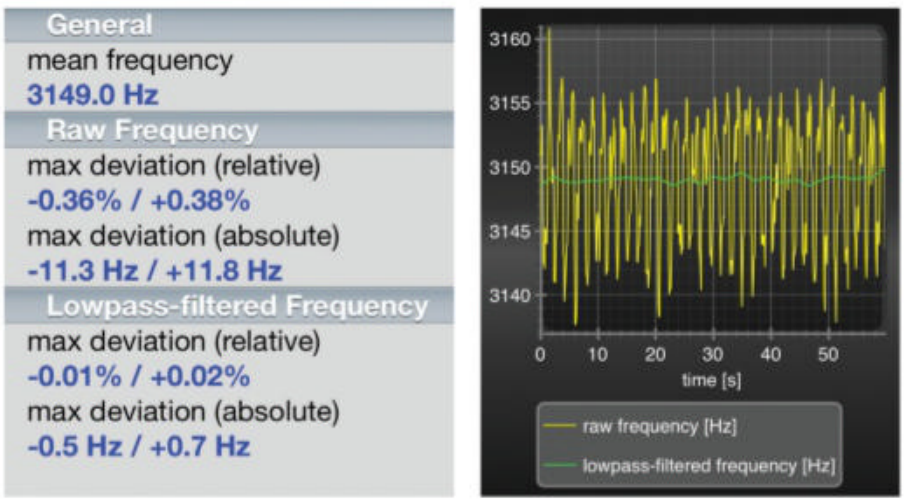
I set up an Ortofon A95 phono cartridge and ran it, alternately, into the transformer-coupled Ypsilon VPS-100S phono preamp, via the MC-20L SUT and one of the CH Precision P1/X1 combo's two transimpedance inputs. Both phono preamps cost more than the turntable/arm combo does—not that the A-S is cheap!

I chose the low-coloration A95 to hear how it would mate with what I was expecting to be a well-damped, perhaps austere-sounding turntable. Both the lateral and vertical resonant frequencies of the arm-cartridge combo measured ideally, approximately 10Hz, using the *Hi-Fi News & Record Review Test Record* (HFN001).

First up, I tried a 3-LP set, *Liszt Complete Works for Piano and Orchestra* (EMI Electrola SLS 5207), performed by pianist Michel Béroff—a late–19th/early–20th-century specialist with a major in Messiaen—with Kurt Masur conducting the Leipzig Gewandhaus Orchestra. I've never before played this 1980 release—it's on eBay for $130—so why not start now? I'm tired of playing the same old, same old. It matters not that you've probably never heard this record.

The Leipzig Gewandhaus Orchestra's first musical director was Felix Mendelssohn—no slouch he—and among later conductors were Wilhelm Furtwängler and Bruno Walter, one a Nazi sympathizer, the other a Jew who exited in 1933: what a world! The orchestra's home, built in 1885, was bombed in 1944. It moved to a new





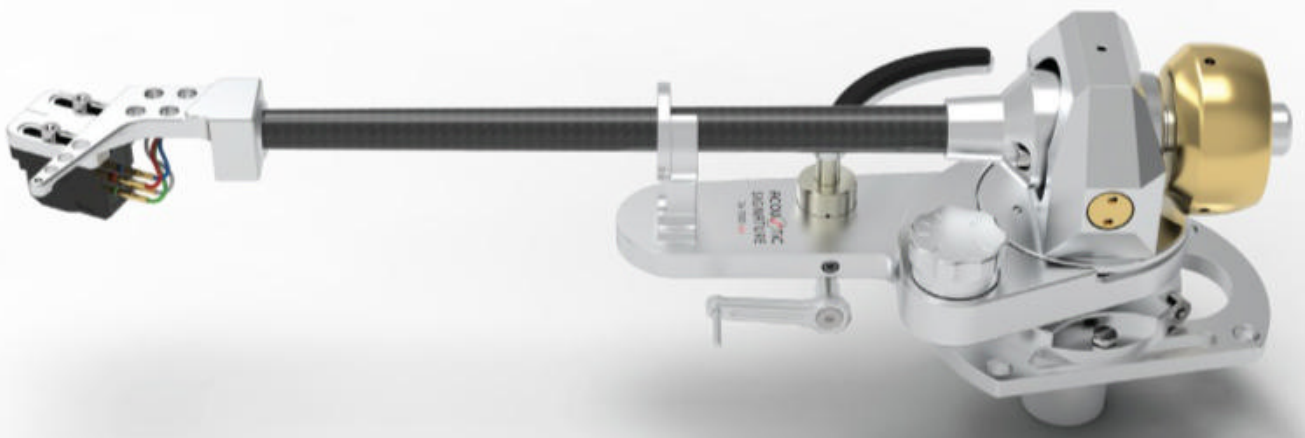
home in 1981. I don't know where in the German Democratic Republic this 1980 release was recorded. But the hall sounds magnificent—not like a small studio with added artificial reverb, though I'm okay with being embarrassed to find out it was.

Pressed by Pallas during its glory days—not that they're not pressing great records now—this is six sides of pressing perfection of a sonically honest and spectacularly natural recording of a dazzling performance captured from a midhall perspective. It's best heard at midvolume.

Played back on the Montana NEO, there was nothing austere about the timbral, spatial, or dynamic presentation, which was warm and inviting and intensely three-dimensional.

Concentrating on side 4's *Fantasy on Hungarian Folk Tunes for Piano and Orchestra*, the picture produced by the A95/Montana combo, with either phono preamp, was visually deep and physically gripping. The illusion, well-established from the first note, was of a hall with a warm-sounding orchestra laid out three-dimensionally in a spatial cushion. In front, stage left, sat the pianist (and of course the piano). Both preamps delivered this, but the sound clicked magically in the mids with the Ypsilon's tube-based circuitry.

The timbral and transient *physical* piano apparition was pinpoint-



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stable, naturally focused, and believable both when played solo and within the orchestral picture. The hall caressed but never enveloped or buried the piano. When Béroff went for the keyboard's top octaves, whether pianissimo or mezzo-forte, the image and timbral authenticity held firm. The balance of attack and soundboard sustain, in the context of an orchestra and hall that can easily swamp the balance, was a tribute to both Tonmeister Eberhard Richter (with whom I was previously unfamiliar) and the turntable/arm combo.

I had no point of reference whatsoever, which is what made the listen so fascinating. The presentation's attack was concise and solid, the sustain reasonably generous. The music decayed into a very black backdrop. It was convincing—not the overdamped, drop-too-quickly-into-black presentation I remember from the original Ascona. (Some people love that sound.)

The well-damped but not *over*damped, fully controlled, supremely well-focused, rock-solid *stable* presentation produced a memorable 3D picture; clearly the Acoustic Signature "sound" based on the engineering scheme. As I played this same side several times, I was not able to imagine what might be added by the far more expensive direct-drive next-door neighbors.

Want to confuse yourself big time? Head next door! Enjoy some music with the wealthy neighbors, drink some wine, light up a fat one. The SAT XD-1/CF1-09ti setup with the Lyra Etna λ Lambda SL delivered a closer-to-the-stage perspective with more reflected hall sound due to more generous sustain, greater harmonic generosity and color, and more string sheen and emphasis on the low end produced by the big strings' majesty—all in what sounded like a bigger space, with more side- and rear-wall reflections. The piano produced more rear-stage reflections, too.

Yet, even if they didn't know the huge price difference, those more interested in detail, clarity, nimble, supertight, locked-in, pinpoint-precise imaging and separation of individual notes without hyperanalytical, unnatural etchiness—qualities particularly noticeable when the pianist unleashes long strings of rapid-fire glissandos—might prefer the Montana's superorganized conciseness and find the SAT (or the similar-sounding OMA) sounded somewhat diffuse or blurry. On the other hand, when it came to generosity of dynamic contrast, orchestral breath, and the creation of a supple living-music bubble, it was a no-contest win by the bigger, more costly 'tables. As it should be. I'd expect a direct Montana–Invictus comparison to yield similar results.

I swapped the two cartridges. It was time consuming but useful. It made clear that the A95's sonic personality—its image focus, detailed 3D presentation, tight, muscular bass, and honest but less-than-lush midrange—reinforced the Montana's similar sonic personality, helping to produce the vivid, 3D excitement I described above. The Etna λ Lambda SL on the TA-7000/Montana produced a more generous, rich, full midrange and midbass, a presentation that added spatial context and richness to vocals and acoustic instruments.

The double LP *Carole King & James Taylor Live at the Troubador* (Craft CR00209)—a Boomer delight—arrived midreview. This LP was recorded during the duo's 2007 appearance backed by The Section (Danny Kortchmar, Leland Sklar, and Russ Kunkel). Bernie Grundman clearly cut from files (air-brake cymbals, one-note sibilants) that were mastered by the late Doug Sax and Sangwook "Sunny" Nam at The Mastering Lab with QRP plating and pressing.

With the Etna, I heard more of the small, wide, not-particularly-deep West Hollywood 500 seater—I played there once!—than I heard through the A95. King and Taylor were reproduced with more three-dimensionality and solidity. The Etna put me in the first few rows in front of the stage. The comparison demonstrated that the Montana's designers met their goal of producing a neutral, well-damped cartridge-carrier that lets through varied transducer personalities without limiting them in any way.

ASSOCIATED EQUIPMENT

Analog sources OMA K3, SAT XD-1 turntables; SAT CF1-09, CF1Ti-09, Schröder K3 tonearms; Lyra Etna λ Lambda SL, Ortofon A95 cartridges.
Digital sources dCS Vivaldi One SACD player/DAC; Lynx Hilo A/D-D/A converter; Roon Nucleus server; Pure Vinyl and Vinyl Studio software.
Preamplification Line: darTZeel NHB-18S. Phono: MC-20L step-up transformer, Ypsilon VPS-100 phono preamp, CH Precision P1 with X1 PSU.
Power amplifiers darTZeel NHB 468 monoblocks.
Cables Interconnect: TARA Labs Zero Gold, Zero Evolution, Zero and Air Evolution, Analysis Plus Silver Apex, Stealth Sakra & Indra, Luminous Audio Technology Silver Reference, interconnect. Speaker: AudioQuest Dragon, TARA Labs Omega EvolutionSP. AC: AudioQuest Dragon, Dynamic Design Neutron GS Digital power cord.
Accessories AudioQuest Niagara 7000, CAD GC1 and GC3 Ground Controls; AudioQuest NRG Edison AC wall box & receptacles; RSX Industries Power8 box, ASC Tube Traps; RPG BAD, Skyline & Abffusor panels, Stillpoints Aperture II Room panels, Synergistic Research UEF products (various), Symposium Ultra platform; HRS XVR turntable stand, Signature SXR and 2 Stillpoints ESS stands, Thixar and Stillpoints amplifier stands; Audiodharma Cable Cooker; Furutech record demagnetizer; Orb DF-01iA Disc Flattener, Furutech deStat; Loricraft PRC4 Deluxe Audiodesksysteme Gläss Pro, and Kirmuss Audio KA-RC-1 record-cleaning machines.—**Michael Fremer**

Conclusion

Though the arm/'table combo will set you back nearly $50,000, my experience was that every time I put a record on the platter, pressed "on"—even the push buttons delivered precise authority—and lowered the stylus into the lead-in groove, I had no doubt about where the money went, especially because, having set up the turntable myself, I hear the 'table's well-hidden, ingeniously designed, skillfully executed guts in every play.

A neutral and revealing carrier like the Montana NEO/TA-7000 NEO combo means your final satisfaction with it will depend on the cartridge you pair it with—more so than on a less precise turntable. The combo exhibited plenty of warmth when the recording produced it, even with a cool customer like the A95. If you care to warm it up further, there are many cartridges and/or phono preamps that can do that. I imagine the Analog Relax 1000 on this combo would be spectacular, and the Lyra Etna λ Lambda SL definitely is.

If you prefer to emphasize the sonic precision, superior spatial performance, background quiet, and solid imaging? Many phono preamps and cartridges can do that including the CH Precision P1/Xi and the big Boulder 2108 combined with the new Ortofon Verismo or Anna Diamond.

Wherever you wish to go sonically, the Montana NEO/TA-7000 NEO combo can reliably take you there. The pair makes the choosing so much easier because it so clearly self-defines its performance. Once it's packed up and shipped back, I'll surely miss it.

Someday, if I decide to downsize—who knows?—I can see myself moving to Montana. ■

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JOHN ATKINSON

Bowers & Wilkins 804 D4

LOUDSPEAKER

The boxes sit there in our storage units, opposite the 20 banker's boxes that hold 33 years' worth of product-measurement workbooks. The two large boxes are for the Bowers & Wilkins Matrix 801s my wife owned when we got married in 1987.[1] The four smaller boxes are for the B&W John Bowers Silver Signatures and their stands, which I purchased after reviewing them in June 1994.[2] Both pairs of speakers gave superb sound quality back in the day, but now they sit there in the storage unit, their boxes giving me recriminatory looks when I visit.

Stereophile has reviewed many Bowers & Wilkins speakers since the first, the "pregnant kangaroo" DM6, in December 1977.[3] The most recent was the 705 Signature standmount, which I wrote about in December 2020.[4] I concluded my review of the 705 Signature, which costs $4000/pair, by writing that "this elegant loudspeaker stepped out of the way of the music in a very satisfying manner." So, last summer, after I watched a video presentation of Bowers & Wilkins's new 800 D4 series loudspeakers, I asked for review samples of the 804 D4 floorstander, which costs $12,500/pair.

The 804 D4

The D4 800-series loudspeakers are mostly similar to the D3 models,[5] but they incorporate a few revised and upgraded design features. The 804 D4 differs most from its predecessor in that it features what the manufacturer calls the "reverse-wrap cabinet" that had been used for the larger floorstanding 800 series models. The elliptical-plan enclosure has a flat back faced with a vertically ribbed aluminum panel, while the front baffle is gently curved to optimize dispersion. The midrange unit and twin woofers are housed in circular aluminum pods mounted to the baffle. The enclosure has a cast aluminum top panel, covered with a padded material, and the internal Matrix bracing now uses panels made from solid plywood rather than the previous MDF, these reinforced with aluminum bracing.

The 1" tweeter, which uses a

1 You can find my measurements of this pair of Matrix 801s at stereophile.com/content/bw-matrix-801-series-2-loudspeaker-measurements.

2 See stereophile.com/standloudspeakers/272/index.html.

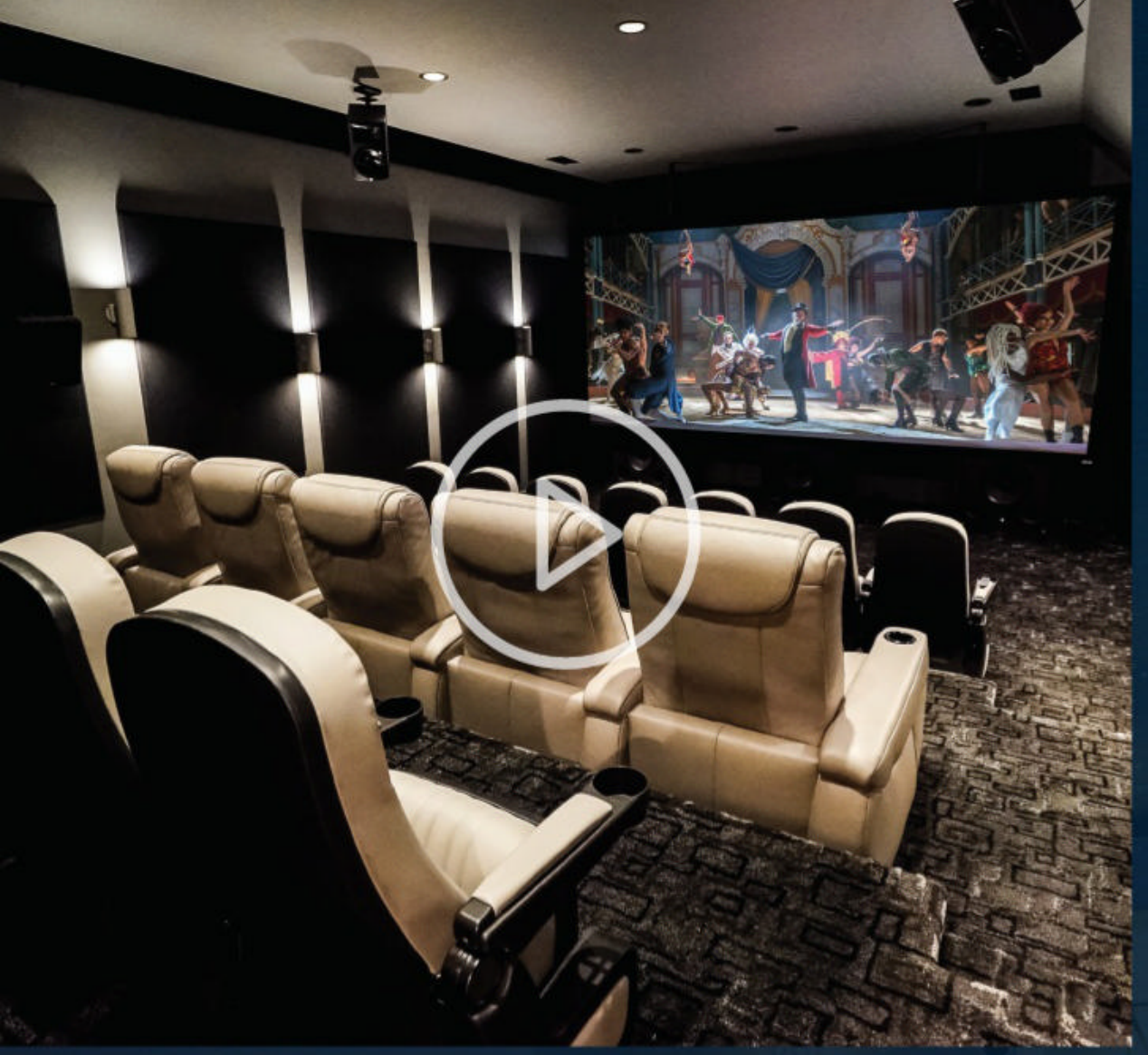
3 See stereophile.com/content/bw-dm-6-loudspeaker.

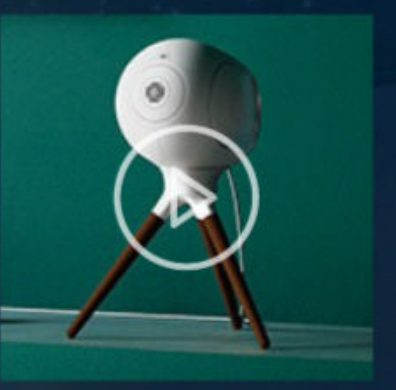
4 See stereophile.com/content/bowers-wilkins-705-signature-loudspeaker.

5 Kal Rubinson reviewed the D3-series 802 loudspeaker in June 2016; see stereophile.com/content/bowers-wilkins-802-d3-diamond-loudspeaker.

SPECIFICATIONS

Description Three-way, reflex-loaded, floorstanding loudspeaker. Drive units: 1" (25.4mm), diamond-dome tweeter; 5" (130mm) Continuum-cone, FST midrange unit; two 6.5" (165mm) Aerofoil-cone woofers. Crossover frequencies: not specified. Frequency response: 24Hz–28kHz ±3dB. Frequency range: 20Hz–35kHz. Nominal impedance: 8 ohms. Minimum impedance: 3 ohms. Sensitivity: 89dB/2.83V/m. Recommended amplifier power: 50–200W into 8 ohms, unclipped program. Supplied accessories: jumper cables, rubber-tipped feet, and spikes, with a spanner and rod to fit the latter.
Dimensions 42.17" (1071mm) H × 12.05" (306mm) W × 15.4" (391mm) D. Weight: 81.1lb (36.85kg) each.
Finish Gloss Black, Gloss White, Satin Rosenut, Satin Walnut.
Serial numbers of units reviewed 2122 0000811 & 0000812. "Made in England."
Price $12,500/pair. Approximate number of North American dealers: 300. Warranty: 5 years.
Manufacturer B&W Group Ltd., Dale Rd., Worthing, West Sussex BN11 2BH, United Kingdom.
US distributor: Bowers & Wilkins, 5541 Fermi Ct. N, Carlsbad, CA 92008.
Tel: (800) 370-3740.
Web: bowerswilkins.com.





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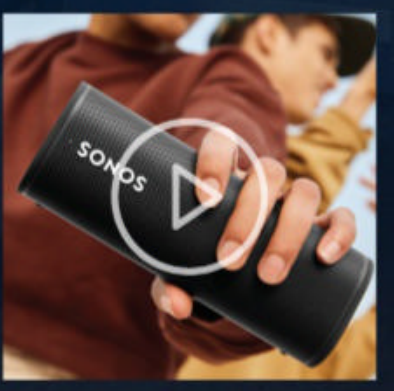

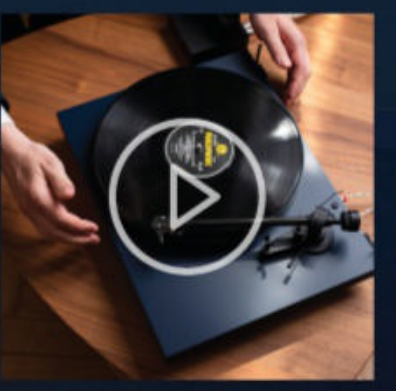

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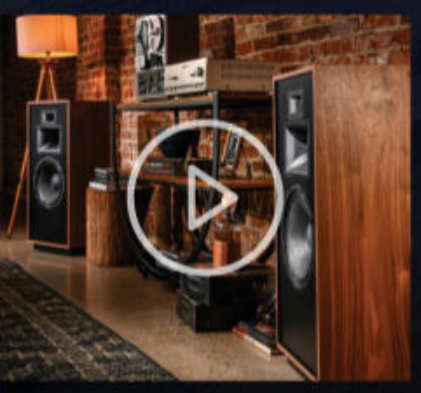

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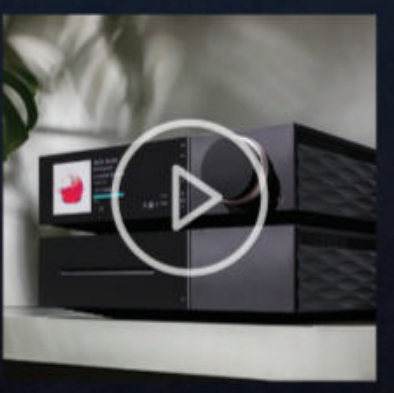

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vapor-deposited diamond diaphragm, is mounted at the front of a 12"-long tapered tube machined from a solid aluminum billet. This sits on the top of the enclosure with two compliant mounts. The tweeter's motor has a vented pole-piece so that the back wave can be absorbed within the tube. (I couldn't detect any output from the end of the tube.) B&W says that "the tweeter's motor assembly has been re-engineered to allow the drive unit to 'breathe' more effectively with no loss of performance. The result is a notable reduction in the resonant frequency behind the tweeter dome."

The 5" midrange unit uses a cone formed from Bowers & Wilkins's now-familiar silver-colored, woven Continuum material. This material is said to be very light and stiff, with very high self-damping. As with earlier generations of this driver, it dispenses with a

conventional surround in favor of what B&W calls its Fixed Suspension Transducer (FST) technology. Instead of the conventional fabric "spider" that keeps the voice-coil centered within the motor, the D4 series' midrange driver features a "composite Biomimetic Suspension" system that presents lower air resistance to the rear of the drive unit's diaphragm. The result, according to B&W, is "unprecedented midrange transparency and realism."

The two 6.5" woofers use the manufacturer's Aerofoil cones, which have a low-mass "syntactic foam" core, with a carbon-fiber skin that varies in thickness from a minimum around the central voice-coil, increasing as the radius increases then thinning again as it approaches the surround. This topology is said to maximize stiffness without adding mass. The D4 speakers add a new foam Anti-Resonance Plug, which

MEASUREMENTS

I used DRA Labs' MLSSA system, a calibrated DPA 4006 microphone, and an Earthworks microphone preamplifier to measure the Bowers & Wilkins 804 D4's frequency response in the farfield. My primary axis for the measurements was level with the tweeter, but I also performed a series of tests on an axis level with the midrange unit, which is 36" from the floor, the height of my ears in my listening chair. I used an Earthworks QTC-40 mike for the nearfield and in-room responses.

Bowers & Wilkins specifies the 804 D4's anechoic sensitivity as 89dB/2.83V/m. My B-weighted estimate was the same. The 804 D4's impedance is specified as 8 ohms, with a minimum value of 3 ohms. The solid trace in fig.1 indicates that the impedance magnitude, measured with Dayton Audio's DATS v2 system, lies between 3 and 6 ohms in the upper bass and midrange, with a minimum value of 2.55 ohms between 121Hz and 131Hz. The electrical phase angle (dashed trace) is occasionally high; for example, there is a current-hungry combination of 3.7 ohms magnitude and –55° phase angle at 87Hz. The effective resistance, or EPDR,[1] drops below 2 ohms between 22Hz and 33Hz, 62Hz and 116Hz, and 663Hz and 886Hz. The minimum EPDR is 1 ohm from 88Hz to 110Hz and 1.6 ohms at 886Hz. The 804 D4 must be used with amplifiers that don't have problems driving 2 ohms.

The traces in fig.1 are free from the small discontinuities that would imply resonances of some kind. When I investigated the enclosure's vibrational behavior with a plastic-tape accelerometer, all the panels were relatively inert. The only resonant mode I found was on the sidewalls at 355Hz (fig.2), but this is very low in level and has a high Q (Quality Factor). (The higher the Q of a resonance, the lower the possibility that it will be excited.)

The blue trace below 350Hz in fig.3 shows the sum of the nearfield outputs of the two woofers, which behave identically. The minimum-motion notch in their outputs, which is when the back pressure from the port resonance holds their diaphragms stationary, lies at a low 28Hz, which coincides with the center of the saddle in the low-frequency impedance-magnitude trace. The red trace shows the response of the downward-firing port, measured with the

1 EPDR is the resistive load that gives rise to the same peak dissipation in an amplifier's output devices as the loudspeaker. See "Audio Power Amplifiers for Loudspeaker Loads," *JAES*, Vol.42 No.9, September 1994, and stereophile.com/reference/707heavy/index.html.

Stereophile B&W 804 D4 Impedance (ohms) & Phase (deg) vs Frequency (Hz)

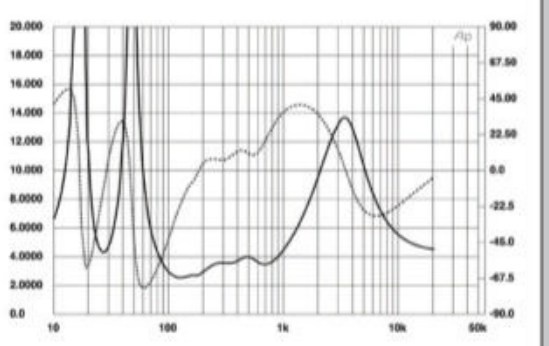

Fig.1 Bowers & Wilkins 804 D4, electrical impedance (solid) and phase (dashed) (2 ohms/vertical div.).

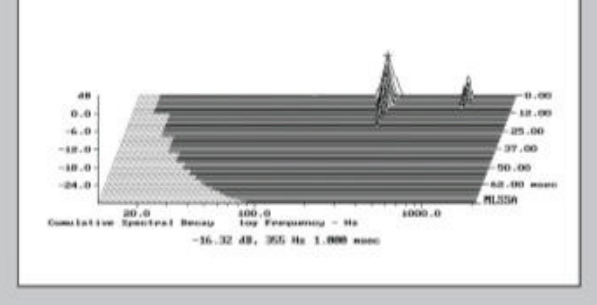

Fig.2 Bowers & Wilkins 804 D4, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of side panel midway between the woofers (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).

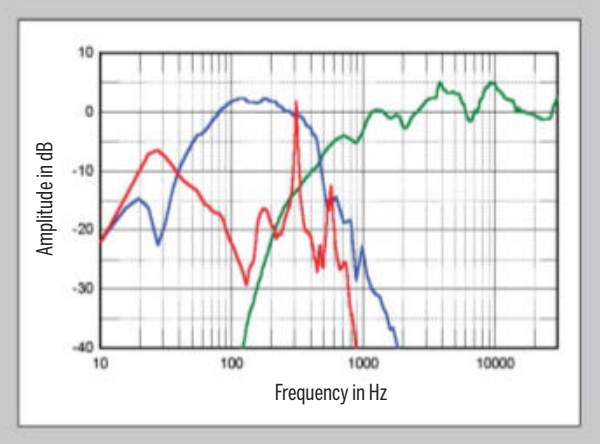

Fig.3 Bowers & Wilkins 804 D4, acoustic crossover on tweeter axis at 50", corrected for microphone response, with the nearfield response of the midrange unit (green), the summed nearfield responses of the woofers (blue), and the port (red), respectively plotted below 600Hz, 1.8kHz, and 900Hz.

B&W claims "gently braces the voice coil and lowers distortion as the cone moves through its operating range, ensuring even cleaner bass."

The woofers are reflex-loaded with a flared "Flowport," which has small dimples in its surface to reduce turbulent air noise. While the 804 D3's port was on the front baffle, the D4's port fires downward into the 1"-high airspace between the enclosure and the cast aluminum base; the enclosure is supported on four short legs. On the base, a constrained-layer steel damping sheet is said to control resonances. The speakers arrive with rubber-tipped feet, which can be replaced with heavy-duty carpet-piercing spikes that are included in the accessories box.

Crossover details are not available. Electrical connection is via two pairs of high-quality binding posts at the bottom of the rear plate. Supplied jumper cables allow for single-wiring.

measurements, continued

microphone capsule inserted into the space between the flared port opening and the aluminum bottom plate. The port's output peaks at the tuning frequency in textbook fashion, but its upper-frequency rolloff is disturbed by two high-amplitude, high-Q peaks, at 308Hz and 567Hz. Peculiarly, this behavior doesn't have any effect on the output of the woofers. All I can think of is that the resonances that cause these two peaks occur in the airspace below the port opening. In any case the fact that the port faces the floor—together with the peaks' high-Q—should minimize the audible consequences of this behavior.

The output of the woofers crosses over to the midrange unit's output (fig.3, green trace below 4kHz) around 450Hz, with a steep high-frequency rolloff. The response of the midrange unit, measured on the tweeter axis, appears to be a little lower in level than that of the tweeter; their combined output is disturbed by a small, narrow peak just below 4kHz and a suckout between 5kHz and 7kHz.

The black trace below 300Hz in fig.4 is the complex sum of the Bowers & Wilkins's nearfield woofer and port responses. The peak in the upper bass, which is due in part to the nearfield measurement technique, is not as fully developed as usual. From my auditioning, I suspect that the woofer alignment is somewhat overdamped, favoring articulation over ultimate low-frequency extension. The red trace in fig.4 shows the 804 D4's farfield response, averaged across a 30° horizontal window centered on the tweeter axis; the black trace shows the farfield response, averaged across a 30° horizontal window centered on the midrange axis. Like the 705 Signature,[2] both traces have an excess of energy between 3.5kHz and 15kHz. However, the suckout between 6kHz and 7kHz on the tweeter axis fills in on the midrange axis to be replaced by a smaller suckout centered on 8kHz. The responses in fig.4 were taken without the small grilles; repeating the tweeter-axis measurement with the grilles resulted in very little change. Commendably, both samples' frequency responses matched within 0.5dB.

Fig.5 shows the 804 D4's horizontal dispersion, normalized to the response on the tweeter axis, which thus appears as a straight line. The contour lines in this graph are smooth and evenly spaced, correlating with the stable stereo imaging I noted

2 See tinyurl.com/bn7kyj6d.

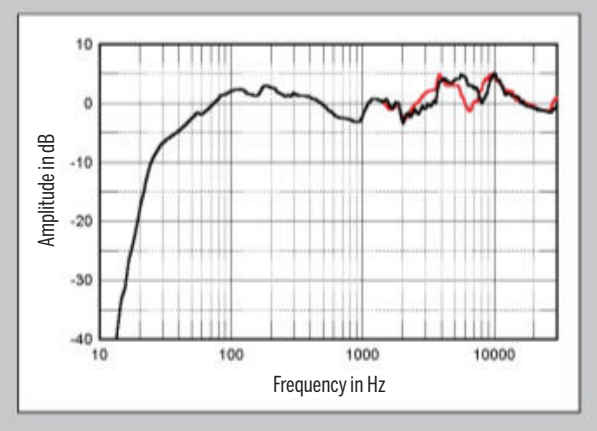

Fig.4 Bowers & Wilkins 804 D4, anechoic response on midrange axis (black) and tweeter axis (red) at 50", averaged across 30° horizontal window and corrected for microphone response, with the sum of the nearfield plotted below 300Hz.

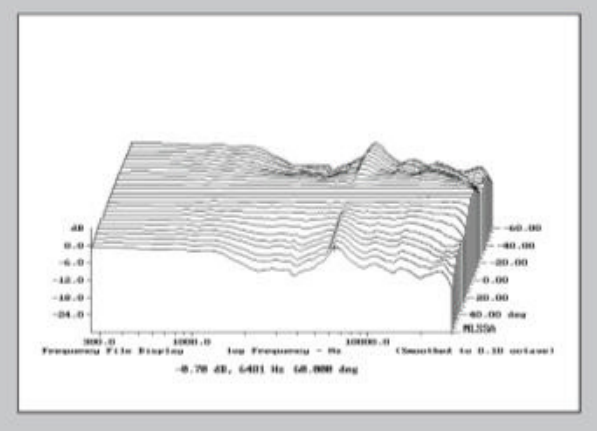

Fig.5 Bowers & Wilkins 804 D4, lateral response family at 50", normalized to response on tweeter axis, from back to front: differences in response 60°–5° off axis, reference response, differences in response 5°–60° off axis.

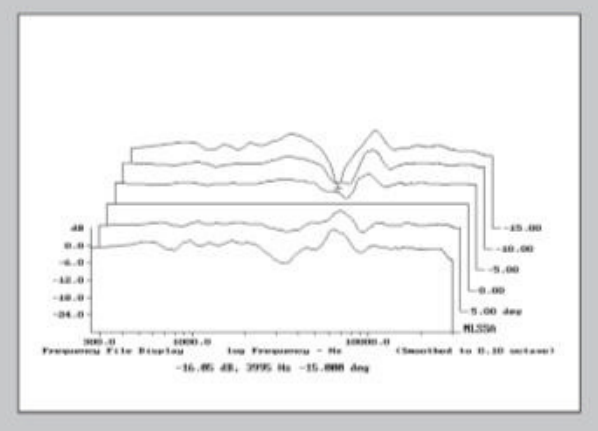

Fig.6 Bowers & Wilkins 804 D4, vertical response family at 50", normalized to response on tweeter axis, from back to front: differences in response 15°–5° above axis, reference response, differences in response 5°–10° below axis.

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Setting up

Optimizing the positions of the 804 D4s proved to be a little more difficult than I was expecting from my experience with the 705 Signatures. With the speakers as close to the wall behind them as I could manage with the short flight of stairs to the vestibule behind the right speaker, this gave the best transition between the lower midrange and upper bass, but the lowest-frequency room mode was excited too much. I moved each speaker forward so that the mode was lower in level, but now the upper bass was too quiet.

I ended up with the 804 D4s close to where the PSB Synchrony T600s[6] worked best: each front baffle 131" from the listening position and 81" from the front wall. The woofers of the left 804 D4 were 36" from the LPs that line the nearest sidewall; the right-hand speaker's woofers were 54" from the sidewall behind the bookshelves that line it. When I sit in my listening chair, my ears are 36" from the floor, level with the 804 D4's midrange unit. The speakers were toed-in to face the listening position. Once I had decided on their final positions, I replaced the rubber-tipped feet with the spikes. I didn't use the magnetically attached grilles.

The music source was my Roon Nucleus+ feeding audio data over my network to an MBL N31 CD player/DAC, which was connected to a pair of Parasound Halo JC 1+ monoblocks. The speakers were single-wired with AudioQuest Robin Hood cable.

Listening

Listening to the dual-mono pink noise track on the *Editor's Choice* CD (Stereophile STPH016-2), I noticed too much treble energy. I followed the advice in the manual to toe-in the speakers so that they point at a location just in front of the listening position. This reduced the treble excess sufficiently that I could now hear that the pink noise was reproduced with an uncolored midrange, though there was still some emphasis in a narrow band in the presence region. The image of the pink noise was stable but not quite as narrow as it was with the GoldenEar BRX or KEF LS50 minimonitors.

The 804 D4s reproduced the 1/3-octave warble tones on *Editor's Choice* down to the 40Hz band, with the 160Hz warble a little too high in level and the 80Hz and 63Hz warbles slightly lower in level than those at either side—all room effects. The 32Hz tone was reinforced by the lowest room mode, and I could still hear the 25Hz warble at my usual listening level, but the 20Hz tone was inaudible. The warble tones sounded clean, which implies low distortion.

The half-step–spaced tonebursts on *Editor's Choice* spoke cleanly down to 32Hz, the frequency of the lowest one, though those

6 See my review in the November 2021 issue at stereophile.com/content/psb-synchrony-t600-loudspeaker.

measurements, continued

in my auditioning. There is a slight lack of presence-region energy to the speaker's sides, while the ridge of off-axis energy at the cursor position reveals that the on-axis suckout in that region tends to fill in to the 804 D4's sides. In the vertical plane (fig.6), the mid-treble suckout in the Bowers & Wilkins's response fills in as expected on the midrange axis. A notch at 4kHz appears 15° above the tweeter axis, which suggests that this is the crossover frequency between the midrange unit and the tweeter.

The red trace in fig.7 shows the Bowers & Wilkins 804 D4s' spatially averaged response at their final positions in my room. (The spatial averaging[3] tends to average out the peaks and dips below 400Hz that are due to the room's resonant modes.) For reference, the blue trace shows the spatially averaged response of the PSB Synchrony T600s, which had some of their ports blocked, as I discussed in my review in the November 2021 issue.[4] The Bowers & Wilkinses excite the lowest frequency mode just above 30Hz in my room to a greater extent than the PSBs and have less output in the upper midrange. While the T600s have the usual gentle downward slope in the top two audio octaves,[5] I did find their highs to sound somewhat mellow. By contrast, the 804 D4s have greater output in the mid-treble, which is what I heard.

In the time domain, the 804 D4's step response on the tweeter axis (fig.8) reveals that all the drive units are connected in positive acoustic polarity, with each drive unit's step smoothly blending with the start of the next-lower-in-frequency unit's step. The 804 D4's cumulative spectral-decay plot on the tweeter axis (fig.9) is clean in the midrange and treble but is marred by a ridge of delayed energy at 3.8kHz, the frequency of the narrow peak in the farfield response.

The Bowers & Wilkins 804 D4's measured performance is enigmatic, with positive aspects—the relatively high sensitivity, the superbly quiet enclosure, the well-controlled dispersion, and the excellent pair matching—that must be set against others, like the demanding impedance, the excessive high frequencies, and the resonances in the port's and upper-frequency units' output.**—John Atkinson**

3 Using the FuzzMeasure 3.0 program, a Metric Halo MIO2882 FireWire-connected audio interface, and a 96kHz sample rate, I average 20 1/6-octave–smoothed spectra, individually taken for the left and right speakers, in a rectangular grid 36" wide by 18" high and centered on the positions of my ears.

4 See stereophile.com/content/psb-synchrony-t600-loudspeaker-measurements.

5 A loudspeaker that offers a flat on-axis response and well-controlled lateral dispersion gives a gently sloped-down treble in its spatially averaged room response due to the increased absorption of the room's furnishings and the narrowing of the tweeter's radiation pattern at high frequencies.

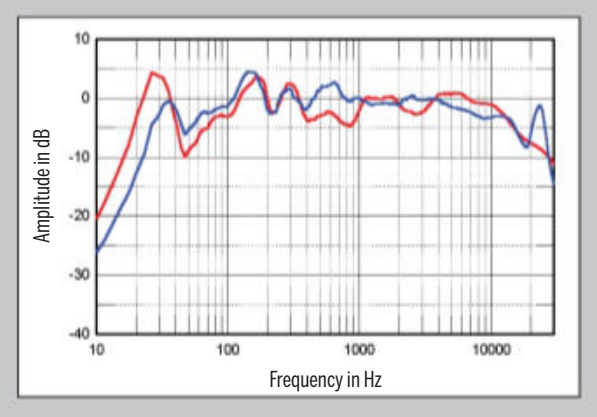

Fig.7 Bowers & Wilkins 804 D4, spatially averaged, 1/6-octave response in JA's listening room (red) and of the PSB Synchrony T600 (blue).

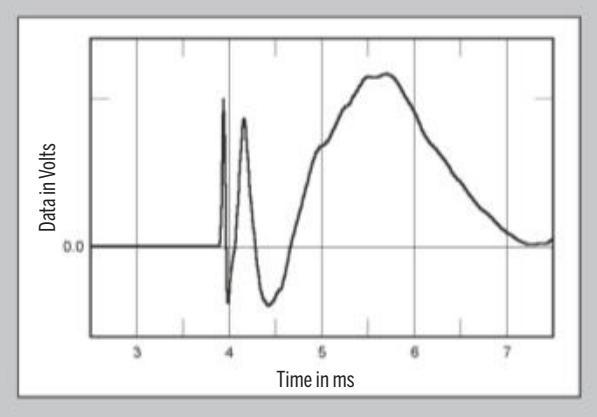

Fig.8 Bowers & Wilkins 804 D4, step response on tweeter axis at 50" (5ms time window, 30kHz bandwidth).

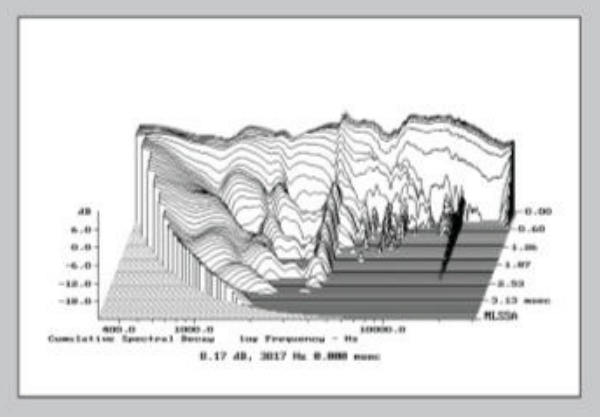

Fig.9 Bowers & Wilkins 804 D4, cumulative spectral-decay plot on tweeter axis at 50" (0.15ms risetime).

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between Middle C (252.63Hz) and the E two steps higher (329.6Hz) were slightly accentuated. Listening to the enclosure's sidewalls and rear panel with a stethoscope while these tonebursts played, I couldn't hear any resonances.

Whether the level of the 804 D4's treble or its upper midrange sounded close to correct depended on the music being played. With recordings that did not have a lot of high-frequency energy, solo piano recordings such as Robert Silverman playing Liszt's *Liebestraum* on *Editor's Choice*, for example, my ears settled on the midrange as their reference level. The Steinway D played by Silverman was reproduced without any notes thrust out at me and was clearly set within the acoustic of the Albuquerque church where we had made the recording. And when Silverman hit the low E-flat with the left hand under the high E-flat 7-9 chord in the right hand at measure 58, which leads to the restatement of the melody, the clarity of every note was stunning.

Roon Radio followed the Silverman track with the second Zenph "reperformance" of Sergei Rachmaninoff's arrangement of Fritz Kreisler's *Liebesleid*, from one of my 2010 Records 2 Die 4, *Rachmaninoff Plays Rachmaninoff* (16/44.1k MQA FLAC, decoded by Roon to 24/88.2k, Tidal/RCA Red Seal 748971). The subtle ambience around and behind the Steinway D reproducing piano—controlled by MIDI data derived from the original piano roll—was clearly resolved by the B&W 804 D4s, and as with my Silverman recording, the sound of the piano was reproduced without midrange coloration. Some of the highest notes, however, did sound a tad accentuated.

Staying with Rachmaninoff and the piano but adding an orchestra, I cued up the composer's second Piano Concerto, with Vladimir Ashkenazy accompanied by Bernard Haitink conducting the Concertgebouw Orchestra (16/44.1 ALAC file ripped from CD, Decca 4757550). Again the 804 D4's clarity in the midrange and bass was impressive, allowing the tolling tonics and fifths in the piano's left-hand register to underpin the big tune in the low strings at the start of the work's first movement.

I share Jason Victor Serinus's love for the late Lorraine Hunt Lieberson's live recital *Lorraine Hunt Lieberson: Mahler, Handel & Lieberson* (16/44.1 ALAC, ripped from CD, Wigmore Hall Live 0013). Her creamy-toned performance of "E Viva Ancora," from Handel's opera *Ariodante*, sounded superbly natural. Pianist Roger Vignoles's piano was appropriately set back in the acoustic of London's Wigmore Hall, a venue I used to attend regularly before I moved to the US. It did sound a touch more reverberant than I am used to, however.

The more high-frequency energy there is in a recording, the more likely that the ear will latch on to that as its reference, in which case the 804 D4's upper midrange will start to sound undernourished. This was the case with Giuliano Carmignola playing J.S. Bach's Violin Concerto in E with Concerto Köln (16/44.1 ALAC file, from Archiv 0289 479 2695 5). I love this energetic performance, but the recording is already a little on the thin side.

On the 804 D4s, there wasn't quite enough upper-midrange energy to fully support the solo violin. The sense of space surrounding the ensemble was palpable, however.

While the 804 D4 offers extended low frequencies—the orchestral bass drum in Malcolm Arnold's overture *Beckus the Dandipratt*, with the composer conducting the London Philharmonic Orchestra (24/176.4 ALAC file transcoded from WAV, Reference HR-48), was reproduced with wall-shaking weight—the speaker's woofer alignment seems optimized for clarity. Jerome Harris's soft-toned Taylor acoustic bass guitar on "The Mooche," from *Editor's Choice*, was reproduced with excellent leading-edge articulation. Again, the sense of the surrounding ambience on both the Arnold and Harris tracks was excellent.

Art Baron's trombone on "The Mooche" had a touch more edge to its sound than I am used to, however. I turned to an album I had in heavy rotation in the late 1970s but hadn't listened to in decades: Jackson Browne's *Running on Empty* (Rhino-Elektra). I love how "The Load Out" segues into that old classic "Stay." I was streaming the 24/192 FLAC files for those tracks from Qobuz. As with the trombone, I was aware of some presence-region emphasis on Browne's vocals, which had me lowering the volume to a more comfortable level. Once I had done that, I was again impressed by the 804 D4's transparent view into the mix.

Summing up

Having visited Bowers & Wilkins's research facility and factory in England, I believe their engineers can design a loudspeaker to sound and measure any way they wish. From my experience, not just with the 804 D4 but with the 705 Signature—where I wrote, "I was surprised how much I enjoyed having the Bowers & Wilkins 705 Signature in my system … because the speaker's measured performance implies a somewhat 'tailored' sonic character"—both the 804 D4's measurements and its sonic signature indicate that achieving a classically flat and neutral tonal balance à la Floyd Toole's writings was not the design team's primary goal. Instead, clarity, transparency, low-frequency articulation, and the absence of midrange coloration seemed to have had a higher priority.

Even after I had measured this loudspeaker, the issues I found seemed to step out of the way of the music much of the time. Those port resonances seemed to have very little effect on midrange clarity, and while I was occasionally aware that the resonance just below 4kHz was adding some presence-region emphasis, it did not seem to be excited with most recordings. The extreme toe-in recommended in the manual reduced the audibility of the excessive treble, though the speaker's high-frequency balance will make system matching more difficult than usual. And combined with the speaker's high impedance in the mid-treble, it will make tube amplifiers sound overbright.

Overall, however, I found the 804 D4's sound seductive. This is a loudspeaker you need to audition. ■

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Accustic Arts AMP V

STEREO AMPLIFIER

The $50,000, 176lb Accustic Arts AMP V (pronounced Amp Five) is the heaviest, tallest, most powerful, most expensive stereo amp to enter my audio system. With rated power of 900Wpc into 8 ohms, 1360Wpc into 4 ohms, and 1500Wpc into 2 ohms, the AMP V, which stands proud at the top of the Accustic Arts amplifier line, surpasses my reference D'Agostino Progression M550's rated power into 4 ohms by 260Wpc.[1]

What, if anything, might those extra 260Wpc—and those extra pounds of transformer and heat-dissipating metal—mean sonically in my moderately sized listening room? I was determined to find out.

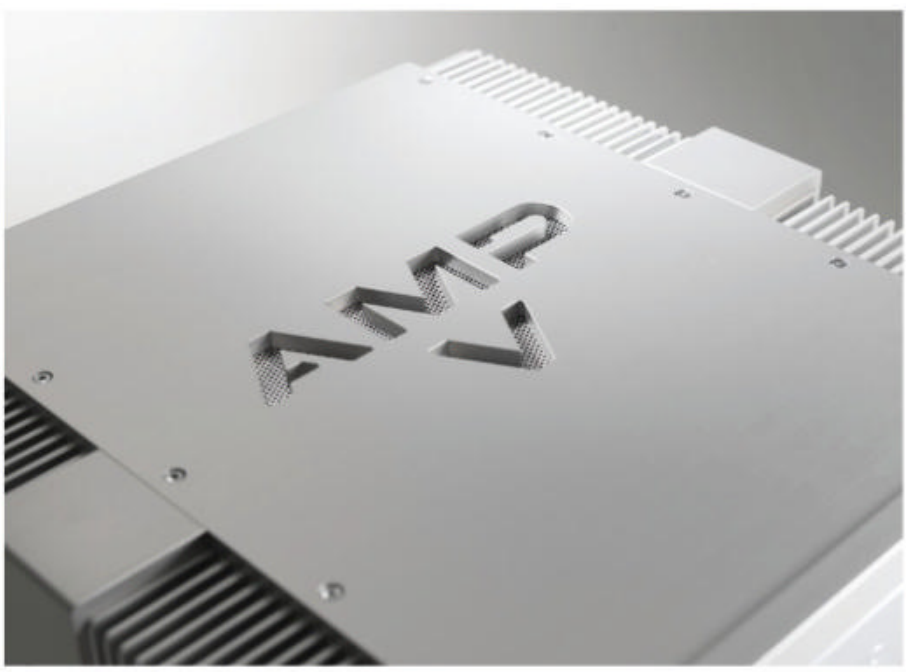
The AMP V is one of the quietest amps I've ever heard.

Rock the joint

"I listen mainly to rock and a few classical tracks—for example, *The Planets*," AMP V designer Sebastian Ruland told me during a WhatsApp chat that also included Hans-Joachim "Jochen" Voss, the owner of Accustic Arts. "This is the main thing I was thinking about musically when I was designing."

"We wanted sound that's authentic and natural," Voss added. "Some electronics sound overly analytical. We have tried to make the AMP V sound as natural as live music, from the bass to the

1 My Wilson Audio Alexia 2 loudspeakers have 4 ohm nominal impedance.



heights, without overdoing the bass. Our goal is to produce really solid, good-sounding music that works with all good loudspeakers. For example, we've been at AXPONA with Magico and Van den Hul."

The AMP V is the successor of the AMP III,[2] but almost everything about the AMP V is new. "The AMP III, which was in production from 2011 to 2016, was taller and looked more like a cube. It also lacked sufficient space inside," Ruland said. With no concern for designing to a price point, Accustic Arts "did what we needed to do [as we] created our biggest stereo amp, with a 30% price increase from the AMP III."

The AMP V remains a current-mirror, dual-mono MOSFET design. The V has 40 MOSFET output transistors, identical internal cabling, and identical, "improved" printed circuit board (PCB) traces for each channel. The improved tracings are part of a new PCB design that includes gold-coated traces and gold-plated contacts; they're said to raise the damping factor and improve "other parameters"—that's from Ruland. Everything is hand soldered.

"In the AMP III, there was a problem with high frequencies and high power," he acknowledged. "The protection circuitry inside the amp would sometimes be triggered if, for example, you took a 16kHz signal with 20 volts on the output. The new PCB addresses this."

"The gold maintains constant contact resistance. There's no corrosion or anything like that, and no change over time," Ruland said.

Two pairs of new, gold-plated WBT speaker terminals allow for biwiring or biamping. The AMP III had only single-ended inputs, but the AMP V is a fully balanced class-AB design with an added pair of balanced inputs. Ruland estimates that as much as 8% of the amp's output is in class-A. That's close to 100W.

Ruland designed the amp's two identical, magnetically shielded toroidal power transformers, which were manufactured in a facility 80 miles away; it's the first time Ruland has designed the transformers in an Accustic Arts amplifier. Accustic Arts says the power supply has capacitance in excess of 220,000µF. To remove any possibility of hum—I heard none—transformer inductance was decreased by increasing the number of windings. "It's about the ratio between input windings and output windings," Voss said. "To get more power, we had to increase the output voltage as well." The AMP V boasts 40% more power than its predecessor and is, in Voss's opinion, "more musical."

Damping factor linearization

New to the AMP V and its MONO 5 sibling is "damping factor linearization," an option engaged by pushing the Damping Control "On/Off" button on the amp's rear panel. According to the 1½-page explanation in the AMP V's well-laid-out, printed instruction manual—it was not available online at press time—modern, high-power transistor amplifiers have very low internal resistance and therefore naturally high damping factors. "These high damping factors are desired because they have a very positive effect on

2 The smaller, forthcoming AMP IV is, similarly, the successor to the AMP II.

SPECIFICATIONS

Description Solid state, dual-mono stereo power amplifier. Inputs: 1 balanced (XLR), 1 pair single-ended (RCA). Outputs: 2 pair WBT binding posts. Input impedance: balanced, 16k ohms; single-ended, 15k ohms. Minimum loudspeaker impedance: 2 ohms. Voltage gain: 30dB. Frequency response: 10Hz–50kHz (+0/–0.5dB) at 10W into 4 ohms. Rated power output at 1% THD+N: 900Wpc into 8 ohms (29.5dBW), 1360Wpc into 4 ohms (28.3dBW), 1500Wpc into 2 ohms (25.8dBW). Zero signal current setting: 300mA. Power supply capacitance: approx. 220,000µF. S/N ratio: 96dBA (ref. 6.325V). THD+N into 4 ohms at 10W, 1kHz: 0.002%. Channel separation: 105dB at 1kHz. Power consumption without load: approx. 230W. **Dimensions** 20.9" (530mm) W × 12.9" (328mm) H × 21.5" (545mm) D. Weight (total): 176lb (80kg). Shipping weight: 224.5lb (102kg). **Finish** Burnished and polished aluminum. **Serial number of unit reviewed** A5-2ZA1124. Manufactured in Germany. **Price** $50,000. Approximate number of North American dealers: 10. Warranty: 1 year; 2 or 3 additional years upon registration.

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important technical parameters, eg, on distortion characteristics. … The degree and progress of the damping-factor influence … the control of the connected loudspeaker by the power amplifier.

"Claims are often made that a higher damping factor is better for controlling the loudspeaker, and therefore the system sounds better. That is not the case. Correct is that a power amplifier with a very *low* damping factor is not able to sufficiently control the loudspeaker. It is, however, true that a loudspeaker does *not* have the best outswing behavior with the *maximum* damping factor. The truth is that the value of the damping factor should … be within a certain range which is ideal for the loudspeaker and should be linear for as long as possible over the frequency range.

"In order to meet these two requirements—ideal range and linear curve—we lower the complete value of the damping factor slightly to the ideal value and then linearize it over a wide frequency range." All this happens, of course, only when Damping Control is turned on. When the damping factor is *not* engaged, "the absolute damping factor is then maximized, but from 5kHz, decreases considerably."

Voss and Ruland both noted that damping-factor linearization is intended to improve control of difficult loudspeakers. When the damping control is activated, they say, the AMP V will better convey attack on low bass. To quote Voss: "We listened to *Outbreak* [by Dennis Chambers] in our listening room once with active linearization and once without, and we can hear the difference: Without linearization, the song sounds somewhat held back. Activating the linearization adds more dynamics to the mix. The entire recording gains more openness and room to breathe."

Setup

Acknowledging my physical limitations, I asked two fully vaccinated weightlifters from my gym to help hoist the AMP V onto the top shelf of my four-tier rack. When they arrived, they saw no way to position it without wedging a hand between it and the D'Agostino Momentum HD preamp that would sit alongside it atop my four-tier, eight-shelf Grand Prix Audio Monza double rack. So instead, they lifted one of the 115lb D'Agostino Progression M550 monoblocks from one of my low-lying Monza amplifier stands onto that top shelf and replaced it with the AMP V.

The AMP V requires two 15A power cables, one for each transformer; their receptacles are positioned one above the other on the rear panel. Also on the rear are three buttons: one to engage the Damping Control, another to engage "Mute," which keeps the unit at "perfect" temperature for optimized sound and should be used only for "very short listening interruptions," and a third to choose between the AMP V's single-ended and balanced inputs.

MEASUREMENTS

Usually when I measure an amplification or digital product, I carry the box down the stairs to my basement, where I have my listening room and test lab. However, the Accustic Arts AMP V was too heavy for me to do this. Instead, I rolled it in its wheeled flightcase into the vestibule outside the listening room, removed the flightcase cover, and left the amplifier sitting in the flightcase[1] at the top of the small flight of stairs. I then set up my Audio Precision SYS2722 system (see the January 2008 "As We See It[2]") with its dedicated PC, my analog and digital oscilloscopes, test loads, etc, at the foot of the stairs. The amplifier's two AC leads were plugged into the closest wall socket, along with those for the test system. (This is to avoid ground loops.)

Before I performed the testing, I preconditioned the amplifier by running it at one-eighth its specified power into 8 ohms for 30 minutes, as recommended by the CEA. After the preconditioning, the heatsinks on the amplifier's sides were hot, at 113.4°F (45.3°C). The top panel was warm, at 105.0°F (40.6°C).

Soon after I began the testing—after the preconditioning period—the 15A circuit breaker serving the wall socket into which everything was plugged tripped. (At the time I was measuring distortion at a high power into 4 ohms.) I therefore ran two long extension cords from the 20A wall sockets in the test lab, one for the amplifier, the other for the test gear, and started where I had left off.

The AMP V's specified voltage gain is 30dB. I measured 30.9dB into 8 ohms for the balanced inputs and 30.75dB for the single-ended inputs. All the inputs and outputs preserved absolute polarity, ie, were noninverting. The input impedance was lower than the specified values: 10k ohms balanced, across the audioband, rather than the specified 32k ohms; the unbalanced input impedance was 6.7k ohms compared with the specified 15k ohms. Still, both values are high enough that compatibility problems are unlikely. With the Damping Factor correction switched off, the output impedance (including the series imped-

1 As the flightcase base rose only a couple of inches up the sides of this large amplifier, ventilation was unlikely to be significantly affected.

2 See stereophile.com/content/measurements-maps-precision.

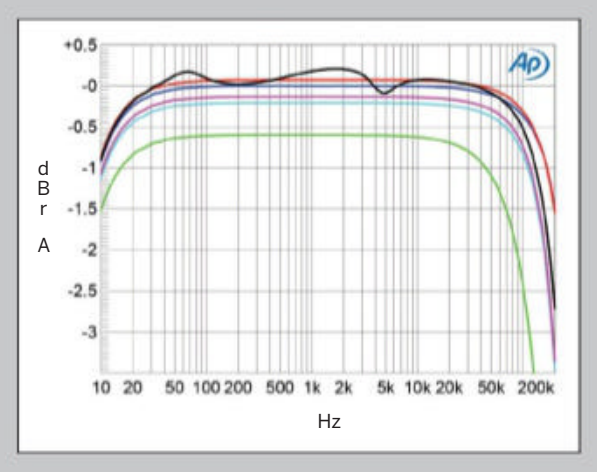


Fig.1 Accustic Arts AMP V, Damping Factor On, frequency response at 2.83V into: simulated loudspeaker load (gray), 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta), and 2 ohms (green) (0.5dB/vertical div.).

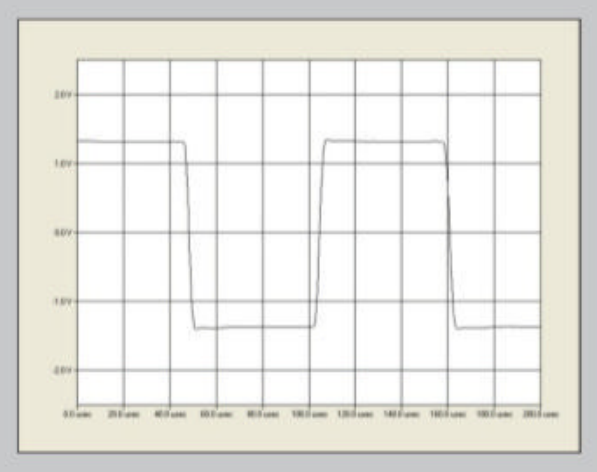


Fig.2 Accustic Arts AMP V, small-signal, 10kHz squarewave into 8 ohms.

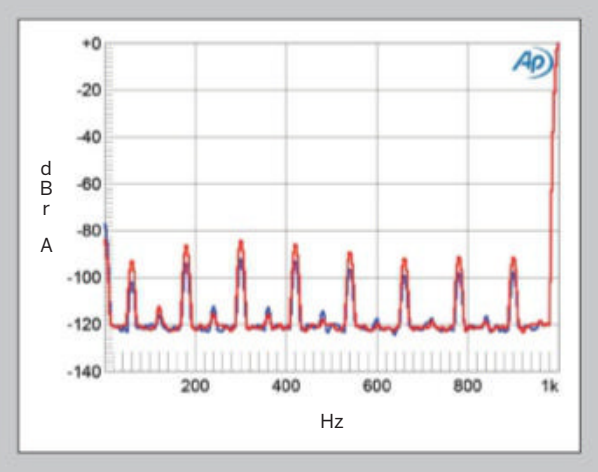


Fig.3 Accustic Arts AMP V, spectrum of 1kHz sinewave, DC–1kHz, at 1Wpc into 8 ohms (left channel blue, right red) (linear frequency scale).

There are two sets of speaker outputs. Two ground contacts are intended for use with shielded, groundable speaker cables.

Behind the power button on the front plate, the AMP V has two power switches, which operate together to disconnect both channels from the power supply. This is not a standby button but a main power switch.

On the front panel, directly below the power button, is a small blue LED flanked by two red LEDs. The red LEDs light up during warmup, after the power button is depressed, which takes about five seconds. When the red lights go off and the blue LED lights up, the AMP V is ready to play music. If a red LED remains lit, there's an error on that channel.

Accustic Arts counsels switching on the AMP V last and turning it off first. They also recommend against turning the amp on and off frequently. "The high amount of switch-on current is a heavy burden for the electrical components" and can "shorten the amp's life."

One related thing, which the company says is "VERY IMPORTANT!: After switching the unit off, please wait 60 seconds before switching it on again."

While I usually place equipment supports under components, I decided to skip them in this case to avoid damaging a hand as I struggled to lift a corner of the amp while not tipping over the amp stand. After connecting XLR and speaker cables, I ran two Nordost Odin 2 15-amp power cables from the AMP V to the same AudioQuest Niagara 7000 power conditioner I use with the D'Agostinos and began my journey.

Color and richness to the fore

On Igor Levit's *On DSCH* (24/96 MQA, Sony 714315), which I reviewed for our December issue, the AMP V's ability to convey the emotion behind the keys confirmed its musicality. On the other recording I reviewed for that issue, Florence Price's Symphonies Nos. 1 & 3 from the Philadelphia Orchestra under Yannick Nézet-Séguin (24/96 FLAC, DG e-release), the AMP V's way with orchestral color and midrange richness came to the fore. On another Price recording that came out at almost the same time, Naxos's issue of Price's Third Symphony from the ORF Vienna Radio Symphony Orchestra, conducted by John Jeter (24/96 FLAC, Naxos 8559897), the highly resolving AMP V easily revealed that Jeter's recording was set farther back and lacked ultimate clarity.

After a trip to Gig Harbor, Washington, to cover the US unveiling of the new Graham LS8/1 loudspeaker, I returned determined to hear how one of the tracks most frequently played by Philip O'Hanlon during the demo—"Birds" from *Nameless* (24/88.2 MQA, Ensoul Records/Tidal) by Canadian artist Dominique Fils-Aimé—sounded through the AMP V and bigger speakers. The

measurements, continued

ance of 6' of spaced-pair cable) was low, at 0.14 ohm from 20Hz to 20kHz. Turning on the Damping Factor increased the output impedance slightly, to 0.2 ohm. Even so, the response with our standard simulated loudspeaker[3] varied by less than ±0.2dB (fig.1, gray trace). The response into 8 ohms (blue and red traces) was down by 1.5dB at 200kHz, and the AMP V's reproduction of a 10kHz squarewave (fig.2) featured short risetimes with no overshoot or ringing. Figs.1 and 2 were taken with the balanced inputs. The frequency and squarewave responses were the same for the unbalanced inputs and with Damping Factor on and off.

Likely as a result of its dual-mono construction, the amplifier's channel separation was a superb 110dB in both directions below 1kHz, falling to 80dB at the top of the audioband, presumably due to capacitive coupling between channels. Measured with the single-ended inputs shorted to ground, the Accustic's wideband, unweighted signal/noise ratio was a good 72.3dB ref. 1W into 8 ohms (average of both channels). This ratio improved to 80.5dB when the measurement bandwidth was restricted to 22Hz–22kHz, and to 83.3dB when the reading was A-weighted. The spectra shown in fig.4 were taken at 1Wpc into 8 ohms. Spuriae can be seen at 60Hz and its odd-order harmonics, which will be due to magnetic coupling from the two massive power transformers. However, these spuriae are very low in level.

I examined how the percentage of THD+N varied with output power, with clipping defined as when the THD+noise in the amplifier's output reached 1%. With both channels driven into 8 ohms, the AMP V didn't meet its specified maximum power of 900Wpc (29.54dBW) at 1% THD+N, clipping at 665Wpc (28.23dBW, fig.4); note, however, that I don't hold the wall voltage constant during the testing, and the wall voltage dropped from 119.2V with the amplifier idling to 114.2V with both channels of the amplifier clipping into 8 ohms. Similarly, into 4 ohms, again with both channels driven, I measured clipping power of 890Wpc (26.5dBW, fig.5); the specified value is 1360Wpc (28.325dBW). This time, the wall voltage dropped to 111.5V.

As I always do, I saved the measurement of the AMP V's clipping power into 2 ohms until the very end. However, when I performed my penultimate test, which was to measure how THD+N varied with

3 See stereophile.com/content/real-life-measurements-page-2.

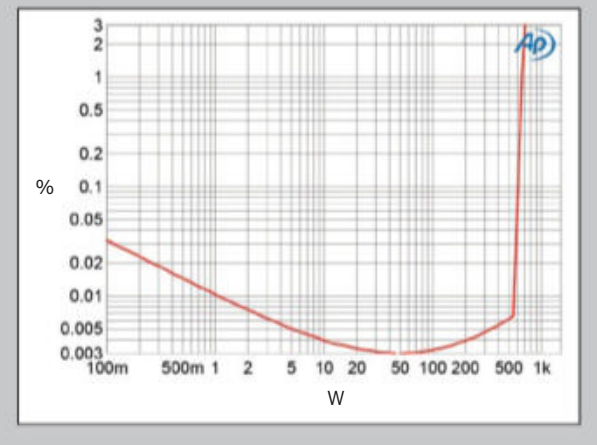


Fig.4 Accustic Arts AMP V, THD+N (%) vs 1kHz continuous output power into 8 ohms.

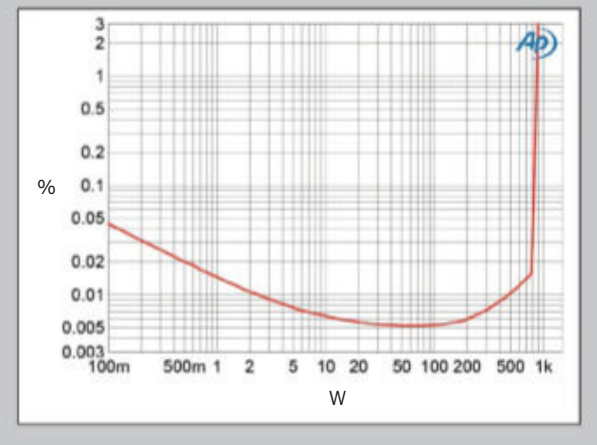


Fig.5 Accustic Arts AMP V, THD+N (%) vs 1kHz continuous output power into 4 ohms.

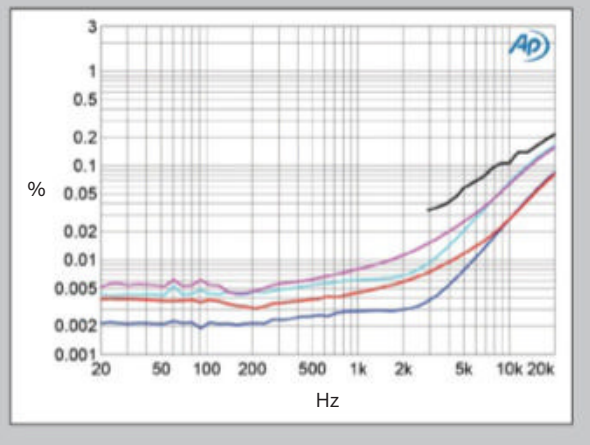
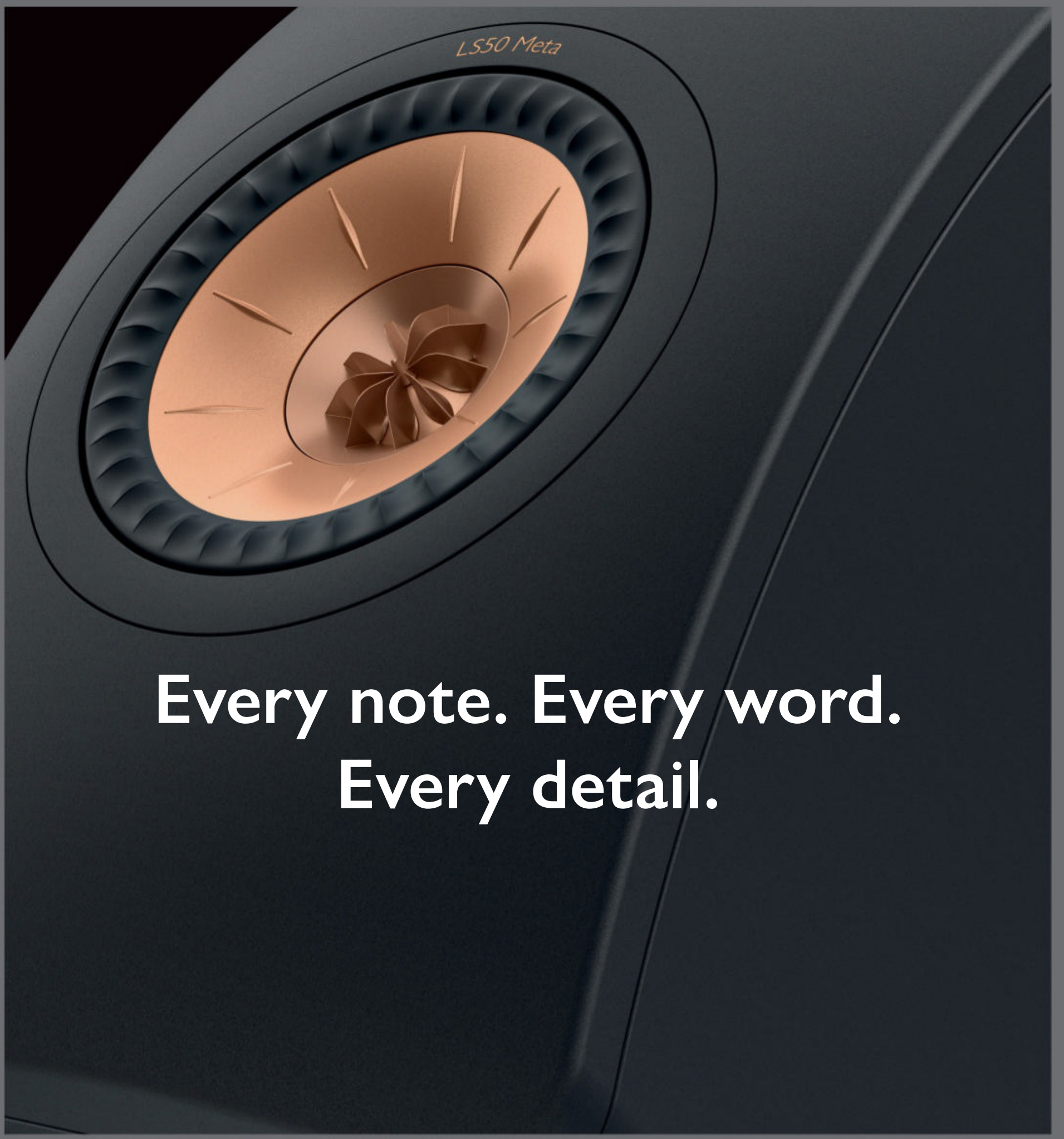


Fig.6 Accustic Arts AMP V, THD+N (%) vs frequency at 20V into: 8 ohms (left channel blue, right red), 4 ohms (left cyan, right magenta), 2 ohms (left gray).



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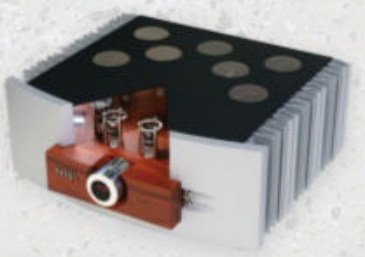

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soundstage was as deep and spacious as could be, double bass sounded strong and fully controlled, and hand claps were believable rather than digitally sharp. On another Fils-Aimé track, "Feeling Good," it was easy to gauge the singer's distance from the microphone. This is an extremely revealing amplifier.

Eager to audition recordings with huge dynamic swings, I asked a few top recording engineers for their favorites. Everything I received was fabulously recorded, but some were far more dynamic than others. (After one engineer warned me of dramatic bursts that could blow out my speakers, my friend Scott and I braced ourselves for the ear-deafening eruption that never came.)

Dynamics or no, I sat stunned as I listened to Tidal's 24/352.8 MQA files of Patricia Barber's album *Clique* (Impex Records). Barber's triumph was recorded by Jim Anderson in Chicago, mixed by him at Skywalker Sound in Northern California, and mastered by Bob Ludwig in Portland, Maine. What immediately stood out was the pristine silence between the notes. The AMP V is one of the quietest

measurements, continued

frequency at 20V (equivalent to 50W into 8 ohms, 100W into 4 ohms, and 200W into 2 ohms), the amplifier turned itself off after 10 seconds of driving 2 ohms at this level (fig.6, gray trace). I had assumed that this would be due to protection circuitry doing its job; however, after I removed the power cables, let the amplifier cool down, and plugged it back in, it wouldn't turn on again. Each of the two AC power sockets has two fuses; all four were okay. The AMP V also has internal fuses, which must have gone open-circuit. I removed the 10 bolts that hold the top panel in place, but I wasn't able to remove it. I tried everything I could think of that did not present a substantial risk of damaging the finish.

Returning to the measurements: Fig.6 shows that the distortion is very low over most of the audioband into both 8 and 4 ohms, though a little higher in the right channel (red and magenta traces) than the left (blue, cyan traces). The THD rises in the top octave—this will be due to a restricted open-loop bandwidth reducing the amount of negative feedback available—but it remains below 0.17% at 20kHz into 4 ohms.

The waveform of the THD+N at 100Wpc into 8 ohms with the 1kHz fundamental notched out (fig.7) suggests that the distortion signature consists primarily of low-order harmonics. The spectrum of the AMP V's output with a 50Hz signal at that level into 8 ohms (fig.8) shows that the second harmonic lay at –106dB (0.0005%) in both channels, the third harmonic at –96dB in the left channel (0.0015%, blue trace) and at –88dB in the right channel (0.004%, red trace). Supply-related spuriae are visible, but all lie at or below –96dB. Fig.9 shows the spectrum of the AMP V's output as it drove an equal mix of 19 and 20kHz tones into 8 ohms at a peak level of 100Wpc. The second-order difference product at 1kHz lies at a negligible –100dB (0.001%), and the higher-order intermodulation products are all at or below –86dB (0.005%).

The Accustic Arts AMP V offers extremely high power coupled with extremely low distortion. But why did those internal fuses blow—assuming that's what happened—after a short while driving 200Wpc into 2 ohms with high-frequency test tones? I don't know what caused it, but I can confidently say that this is unlikely to happen with a music signal.**—John Atkinson**

Fig.7 Accustic Arts AMP V, 1kHz waveform at 100Wpc into 8 ohms, 0.0039% THD+N (top); distortion and noise waveform with fundamental notched out (bottom, not to scale).

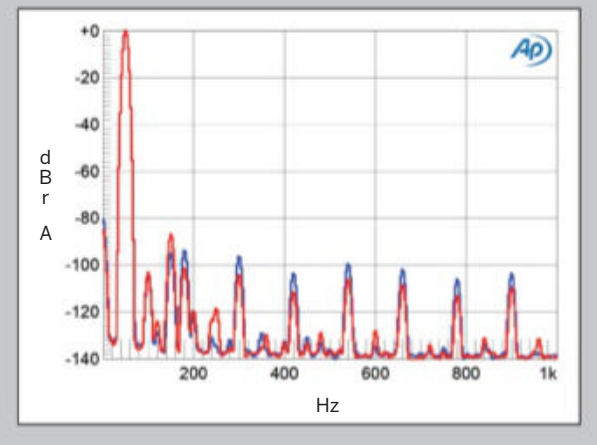

Fig.8 Accustic Arts AMP V, spectrum of 50Hz sinewave, DC–1kHz, at 100Wpc into 8 ohms (left channel blue, right red) (linear frequency scale).

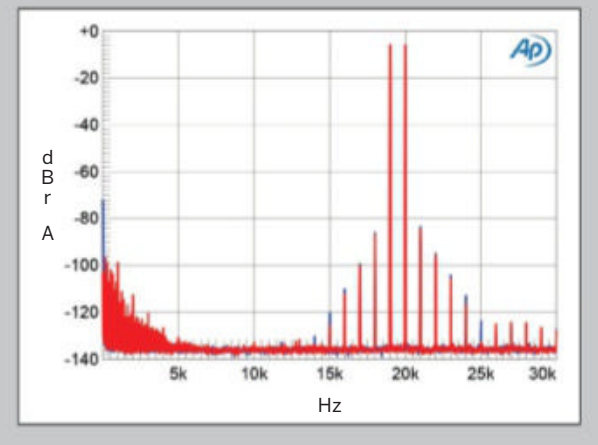

Fig.9 Accustic Arts AMP V, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 100Wpc peak into 8 ohms (left channel blue, right red) (linear frequency scale).

amps I've ever heard. Equally notable was the impressive color saturation, with primary hues and infinite shades of pastel vying for attention with midrange warmth. The first notes I scribbled down were these: "air is tremendous—height cues and depth and soundstage spread super—timbres perfect—huge and spacious—so many subtle soft sounds." What I remember most though was the absolute black silence between notes, which allowed colors and contrasts to shine through.[3]

I reveled in the contrasting timbres of electric guitar and the subtle taps of sticks on the sides of drums. I had never heard the resonance of Barber's piano conveyed so perfectly. Equally impressive—stunning, in fact—was the clarity, weight, and pitch-perfect control of Patrick Mulcahy's bass. I expect that all jazz lovers would take immense pleasure in the way the AMP V differentiates timbres of individual instruments and conveys every subtle variation in color and dynamics. Color and dynamic nuance may be more subtle in jazz than they are on Holst's *The Planets*, but they're even more crucial.

One recording that never fails to enthrall with the sheer expanse of its soundstage (in all directions), natural color, and surprising dynamics is *Eriks Esenvalds: Translations* from the Portland State Chamber Choir under Ethan Sperry (24/96 WAV, Naxos 8574124). On the John Atkinson–engineered cover track, "Translation," and the Doug Tourtelot–engineered "The Heavens' Flock," the silences, the weight of the low male voices, and the dynamic contrasts were the best I'd ever heard from my system. Vocal decay in the exceptionally resonant acoustic of Saint Mary's Catholic Church in Mt. Angel, Oregon, was utterly convincing.

Mastering engineer Tom Fine sent me a few excerpts of 24/192 WAV files from the digital remasters he has prepared for the *Mercury Living Presence Vinyl Series 1* issues.[4] Of Antal Dorati's famed rendition of Stravinsky's *The Firebird* with the London Symphony Orchestra, Fine wrote in an email, "This is an example of the dynamic range present in the master tapes. The music goes from a level so low [that it was] just above the threshold of tape hiss to full digital zero"—that is, maximum digital loudness. The AMP V didn't break a sweat. Rather, it left me wishing that I had a larger listening room and even bigger speakers, with sufficient cabinet volume and big enough woofers to begin to convey the full measure of this recording's bass.[5]

What about Holst's *The Planets*? On Zubin Mehta's 1971 recording with the Los Angeles Philharmonic (24/176.4 FLAC, Decca/Qobuz), I found the sound brash but convincing. The Alexia 2s can produce only so much bass in my room when everything is thrown at them at once. Bass weight is more convincing when a bass drum pounds alone, as on the stunning Reference Recordings version of Copland's *Fanfare for the Common Man* from Eiji Oue and the Minnesota Orchestra (16/44.1 FLAC, Reference Recordings/Qobuz). Taking those limitations into account, the recording's soundstage expanse and visceral impact were tremendous.

Damped if you do, damped if you don't

I first experimented with the AMP V's damping-factor linearization feature while playing electric bassist Brian Bromberg's "The Saga of Harrison Crabfeathers" from his 2002 album, *Wood* (24/96, Qobuz).[6] With it engaged, the sound grew warmer, which was not what I expected or desired.

On *Clique*, I found sound most transparent *without* damping-factor linearization. With it, the ticks of sticks tapping the edge of drums were a bit toned down, air lessened, and a slight bass halo was added around sounds in the treble range. Barber's voice warmed as the midrange became more prominent and highs toned down a bit; if percussion seemed more impactful, it was only because the highs were softer. I experienced similar bass-and-treble changes on Andris Nelsons and the Boston Symphony Orchestra's superb recording of Shostakovich Symphonies Nos. 4 & 11 (24/96 WAV, Deutsche Grammophon 002859502). On *The Planets*, I experienced more clarity, albeit with increased sharpness, without damping linearization.

In my system, Damping Control was a mixed bag.

Comparison

For some audiophiles, the D'Agostino Progression monoblocks ($44,900/pair, 1100Wpc into 4 ohms, 115lb each) and the Accustic Arts AMP V ($50,000, 1360Wpc into 4 ohms, 176lb) are in the same price range. The Progressions, though, are D'Agostino's entry-level monoblocks, while the AMP V is Accustic Arts's reference stereo amp.

In my system, the two amplifiers certainly sounded different, to a surprising extent. Before listening, I used the "1kHz at –20dB reference tone" from the Stereophile *Editor's Choice* CD and a Fluke meter to match levels at the speaker terminals as closely as possible. Then I chose the Brian Bromberg aforementioned track

ASSOCIATED EQUIPMENT

Digital sources dCS Rossini DAC, Clock, and Transport; Synology 5-bay 1019+ NAS; Roon Nucleus+ server; Uptone Audio etherRegen with AfterDark Giesemann Emperor Double Crown Master Clock; Small Green Computer Sonore opticalModules (2) and Deluxe opticalModule; Linksys routers (2) and Arris modem, all powered by HDPlex 300 four-component (3) and HDPlex 200 linear power supplies. Apple 2017 iPad Pro and 2017 MacBook Pro with 2.8 GHz Intel i7, SSD, 16GB RAM.
Preamplifier Dan D'Agostino Momentum HD.
Power amplifiers Dan D'Agostino Progression M550 monoblocks.
Loudspeakers Wilson Audio Specialties Alexia 2 with Acoustic Diodes.
Cables Digital: Nordost Odin 1, Odin 2, and Valhalla 2 (USB); Frey 2 (USB adapter); Wireworld Platinum Starlight Cat8 (Ethernet); OM1 62.5/125 multimode duplex fiberoptic cables. Interconnect: Nordost Odin 2. Speaker: Nordost Odin 2. AC: Nordost Odin 2, AudioQuest Dragon, Dragon HC, and Thunderbird. Umbilical cords for HDPlex LPSs and NAS: Ghent Audio Canare and copper.
Accessories Grand Prix Monza 8-shelf double rack and amp stands, 1.5" Formula platform, Apex footers; Symposium Ultra Platform; Nordost QB8, QX4 (2), QK1, and QV2 AC power accessories, QKore 1, 3, and 6 with QKore Wires, Titanium and Bronze Sort Kones, Sort Lifts; AudioQuest Niagara 7000 and 5000 power conditioners, NRG Edison outlets, JitterBugs; Tweek Geek Dark Matter Stealth power conditioner with High Fidelity and Furutech options; Wilson Audio Pedestals; A/V RoomService EVP Equipment Vibration Protectors; Resolution Acoustics and Stillpoints Clouds (8) and Aperture 1 (2) and 2 (2) acoustic treatments; HRS DPX-14545 Damping Plates; Stein Music Blue Suns, Blue Diamonds, and Quantum Organizer; Bybee Room Neutralizers; Absolare Stabilians; Marigo Aida CD mat.
Room 20' L × 16' W × 9' H.—**Jason Victor Serinus**

3 An equally striking DXD recording for color and space, recorded and mixed by Anderson and mastered and edited by Ulrike Schwarz, is Min Xiao-Fen's *White Lotus*.

4 Sorry, friends old and new, I can't send you copies.

5 With this very hope in mind, I recently bought a Powerball Quick Pick. I missed the winning numbers by five.

6 Thank you, Steve Zettel, for this one.

and Anna Thorvaldsdóttir's orchestral blockbuster, *Metacosmos*, performed by the Iceland Symphony Orchestra on Concurrence (24/352.8 WAV, Sono Luminus DSL-92237). The sound was so different with the two amplifiers that if I hadn't matched levels, I would have thought the volume levels were different.[7] Along with more saturated colors (as in a richer-sounding piano), increased image weight, and superbly controlled bass, the AMP V sounded brighter and brasher than the mellower, warmer Progression M550s. I'm not certain whether the AMP V was truly quieter and more transparent or just seemed so because its more pronounced and etched highs stood out more from the instrumental fabric. It was equally hard to tell if the bass was really stronger or just *seemed* stronger because every sound on the AMP V was so distinct.

As when I compared the D'Agostino Momentum HD preamplifier ($40,000) to the Esoteric Grandioso C1X preamp ($45,000), I felt here that the Accustic Arts amp was more single-mindedly yang in character and the D'Agostino mono more successful in tempering yin with yang.

After I'd packed up the AMP V and the Progression M550s had fully settled back in, I spent an hour listening to Holst's *The Planets*, Barber's *Clique*, and voice and piano recitals by soprano Renée Fleming, mezzo-soprano Susan Graham, and tenor Jonas Kaufmann. I was in heaven. I could happily spend the rest of my life with either amplifier.

Conclusion

Can any single review of audio equipment be definitive, given the differences in listening rooms, equipment configurations, and human sensibility? Perhaps not. Nonetheless, a few things about the AMP V are incontrovertible. It's not just a powerhouse; it's a musical instrument that produces bright colors, huge images,

and seat-shaking bass. Nor does it skimp on detail. While I didn't journey into heavy metal during my time with the AMP V—Bromberg, Holst, and Shostakovich on steroids were as close as I got—the AMP V sailed through numerous ultradynamic tracks whose cumulative percussion and brass would leave many a rock fan diving for cover.

The AMP V is one of the finest and most musically satisfying amplifiers ever to enter my audio system. Anyone with a spare $50,000 (and who doesn't require easy portability) would be foolish not to give it a serious audition. ■

7 I double checked. They weren't.

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Jadis JS1 MkV

D/A PROCESSOR

"Resolution can be a tricky thing when it comes to digital," my friend Michael Lavorgna recently told me. "Too much, and my focus shifts from music to sound; too little, and I become less engaged." Lavorgna, a visual artist and proprietor of the online audio-and-music publication *Twittering Machines*,[1] is one of my favorite people to talk to about records, books, art, and hi-fi. We've been doing it for almost 20 years.

What Michael said about resolution mirrored my own experience but nagged at me. If resolution is a good thing, then how can there be too much of it? After thinking about it for a while, I realized that he was on to something. Designing an audio component

1 Lavorgna is also the former editor of *AudioStream*.

SPECIFICATIONS

Description 24-bit, tubed, two-chassis D/A converter. Tube complement: two ECC82 and two ECC88 in the analog section and one each EL84 and EF86 in the power supply. Inputs: one each AES3, S/PDIF electrical (RCA), S/PDIF optical (TosLink), USB. AES3, coaxial, and TosLink inputs convert data up to 24/192; USB accepts and converts data up to 24/384, plus DSD. Outputs: One pair unbalanced (RCA), one pair balanced (XLR). The JS1 MkV is fully balanced through the XLR outputs. S/N ratio: >100dB. Frequency range: 20Hz–20kHz. Output level: 2.5V RMS. **Dimensions** Each chassis is 18" (455mm) W × 5" (125mm) H × 12.8" (325mm) D. Weight: 66.1lb (30kg). **Finish** Silver and gold. **Serial number of unit reviewed** 694. Manufactured in France. **Price** $20,900. Approximate number of US dealers: 20. Warranty: 2 years excluding tubes. **Manufacturer** Jadis Electronics, 5 Chemin du Pech, 11800 Villedubert, France. Tel: +33(4)68-786330. Web: jadis-electronics.com. US distributor: Bluebird Music Limited. 1100 Military Trail Kenmore, New York 14217. Tel: (416)638-8207. Web: bluebirdmusic.com.

is less like building a suspension bridge and more like cooking a pot of chili: You balance ingredients in an attempt to create something enjoyable. To put it differently, audio components have to be *voiced*. This means not just achieving good sound but prioritizing the listener's ability to enjoy music, since we use our systems to listen to humans making us feel things and not to the whistles of tube-nosed fruit bats.

Enjoying music at home is the sole purpose of this pastime. That's really it. Measurements may provide a starting point and show us why the component sounds the way it does—or not—but designing a piece of audio gear that will enhance your love of music requires the application of aesthetic discernment, experience, and many hours of listening. If you doubt this premise, consider a rite of passage that most of us sooner or later go through: "upgrading" to a component that promises more performance and ends up delivering less engagement.

When I was in my 20s, I saved up for a large, impressive-looking turntable with a sprung suspension; it was intended to replace my comparatively spartan Rega Planar 3. I just knew it would deliver deeper bass, a bigger soundstage, and more silent silences—and it did. But when I listened to it for the first time, I found myself having trouble enjoying—and eventually even paying attention to—the Thelonious Monk record I was playing. I could hear the sonic improvements, but now Monk sounded bored, or maybe mildly sedated; soon, that's how I felt, too. I sold the turntable a month later. Has something like this ever happened to you?

I thought about my conversation with Michael a lot during the several months I spent living with the Jadis JS1 MkV Reference DAC, a two-chassis fantasia in chromed and gold-plated steel that retails for $20,900. Taking it out of its box reminded me of how, as a younger audiophile, I pined for Jadis amplifiers reviewed in these pages; with their gleaming metalwork and rows of tubes, they looked both opulent and steampunk. Handling the JS1, I wasn't disappointed: The input selector knob elicited a distinctly luxurious *thunk*, and instead of the pinprick LEDs found on most audio gear, the French DAC sports multicolored lamps that shine through tiny portholes, which make it easy to find in the dark. This nautical detail and all that polished metal made me think of Jules Verne; occupying two shelves on my equipment rack, the 66lb Jadis processor resembled a piece of navigation gear scavenged from Captain Nemo's underwater ship, the Nautilus.

Despite its majestic weight, size, and price, the JS1 offers few concessions to modernity or convenience: no volume control, no network connection, no selectable filters, no MQA, no wireless anything. On the front, you'll find power switches for the analog and digital sections, as well as the input selector and those bright lights, which indicate whether the unit's on, the file type, and the sampling rate. On the back are four digital inputs, balanced and unbalanced analog outputs, jacks for the two umbilical cables that connect the two chassis—separate connections for the digital and analog circuitry, with independent grounds—and an IEC receptacle for your favorite power cord. That's about it. The message seems to be that the hot-running JS1 is all about listening, not tinkering.

What makes this a Jadis component—and distinct from most other digital gear—is tubes, which are used in the output stage of the analog section and for regulation in the massive outboard power supply. Digital conversion is accomplished with a pair of AK4497 DAC chips from Asahi Kasei Microdevices. S/PDIF (RCA and TosLink), AES3, and USB inputs are provided; these top out at 24/192 except for the USB input, which allows sampling frequencies of up to 384kHz and the playback of DSD files. J.C. Calmettes, the JS1's designer, explained that the S/PDIF, AES3, and optical inputs rely on a digital transceiver to convert the signal to the I²S format before it is routed to the DAC chips, whereas the USB input sends the signal to a decoding board that's connected directly to the I²S bus. This may explain why I strongly

MEASUREMENTS

I used my Audio Precision SYS2722[1] to examine the Jadis JS1 MkV's performance. To minimize the possibility of the analog circuitry picking up noise from the power supply, I placed the supply on the floor, as far away from the processor chassis as the two umbilical cables would allow. The heatsinks on the back of the supply became very hot during testing, their temperature stabilizing at 135.3°F (57.4°C).

The processor's AES3 and optical and coaxial S/PDIF inputs locked to data sampled up to 192kHz. Apple's AudioMIDI utility revealed that the USB inputs accepted 32-bit integer data sampled at rates up to 768kHz. Apple's USB Prober utility identified the JS1 MkV as "Combo384 Amanero" from "Amanero Technologies\000," with the serial number string "414-001." (Amanero Technologies is an Italian company that manufactures USB and other OEM interface modules. The Combo384 USB module has been used in *Stereophile*-reviewed products from ATC, Métronome, and Verity.) The USB port operated in the optimal isochronous asynchronous mode.

Although the Jadis's maximum output level is specified as 2.5V RMS, a 1kHz digital signal at 0dBFS resulted in levels of 6.77V at the balanced output, 3.625V at the single-ended output. A look inside the JS1 MkV's chassis revealed that each channel of the analog circuitry has an ECC88 tube,[2] followed by an ECC82 tube. As these tubes are both twin triodes, I assume that one-half of each tube handles the balanced signal's hot phase, the other the cold phase. The circuit contains no output transformers; the outputs of the ECC82s are capacitor-coupled to pins 2 and 3 of the XLR output jacks, and the single-ended outputs are connected in parallel with each XLR jack's pin 2. The balanced output impedance varied from 2.4k ohms at 20Hz to 1.5k ohms at 20kHz. The single-ended output impedance varied in similar manner, from 1130 ohms to 619 ohms. Both outputs inverted absolute polarity, as can be seen from the impulse response with 44.1kHz data (fig.1). The output impedance is higher than I would expect from the usual cathode-follower circuit; that, together with the polarity inversion, suggests that the tube output stage might be based on an anode-follower topology, which some audiophiles feel sounds better.

Fig.1 indicates that the JS1 MkV's reconstruction filter is a conventional linear-phase type, with time-symmetrical ringing

1 See stereophile.com/content/measurements-maps-precision.

2 The review sample used the functionally identical 6922 tubes instead of ECC88s.

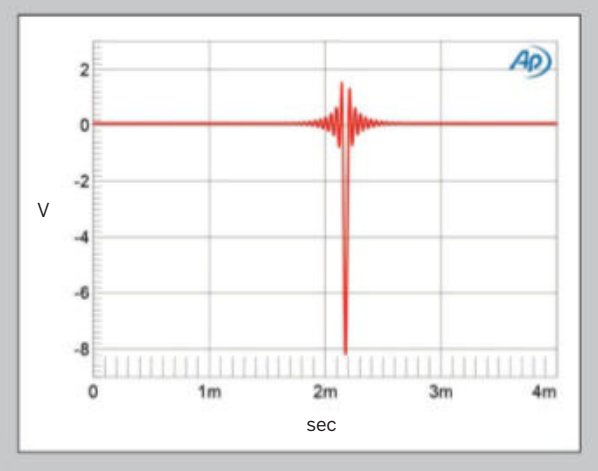

Fig.1 Jadis JS1 MkV, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

Hear that?

It's that moment. The one where the singer's voice cracks perfectly. Sending you back to the road trip you took with your new girlfriend, now your wife, when you heard the song for the very first time. Now you're hearing it again, richer and more vibrant than ever on the Monitor Audio Silver Series. Turn it up. Press repeat.

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preferred listening through the USB input, which sounded more open, dynamic, and colorful than the others. In my experience, DACs that rely on delta-sigma conversion often tend to sound slightly better when playing back DSD rather than PCM files. The JS1 proved no exception, and during my auditioning I got the best results by setting Roon to convert and upsample PCM data to DSD256.

Listening

When first listening to an expensive DAC, I expect to hear playback that's composed, well-sorted, insightful, and maybe a little buttoned down. What I don't expect to hear is sheer fun. Which is why my first listen to the JS1 floored me. It didn't sound like any DAC I've heard; what it *did* sound like is a great 7" record minus the groove noise. Okay, that's overstating things a bit, but the Jadis took almost no time in establishing its expansive, easy-to-listen-to, celebratory personality. It allowed the music to flow with not a trace of the edginess, glassiness, and grayness that plagues some digital components, allowing me to forget whether I was listening to a record or a digital file and focus on the performance.

The Jadis portrayed instruments and voices with more tonal richness and vivid colors than I imagined a digital component could.

In my system, the Jadis DAC did two things remarkably, uncannily well. First, it created a vast, shimmering soundstage that extended across the rear wall of my loft and encouraged me to spend hours enjoying the magic of stereophonic recording. The scale of the sonic images was as big as the recording allowed. When listening to "Polk Salad Annie," from *Walk a Mile in My Shoes: The Essential '70s Masters* (RCA/Qobuz 44.1 stream), Elvis Presley's voice seemed to emanate not just from above my Altec Valencia speakers but from the intersection of the rear wall and ceiling, 15.5' above the floor. The lateral staging was just as eye-popping: Ronnie Tutt's machine-gun drumming and the horns sounded like they came from 8' to the right of my right speaker. On the other side, James Burton's keening Telecaster and the *ching-ching-ching-ching-a-lings* and *chika-booms* of the Sweet Inspirations, one of Presley's two backup vocal quartets, were situated just as far to the left. Between them, an Elvis as tall as a Dairy Queen sang Tony Joe White's scorcher about a "wretched, spiteful, straight-razor totin' woman" who subsisted

measurements, continued

on either side of the single sample at 0dBFS. With 44.1kHz-sampled white noise (fig.2, red and magenta traces), the reconstruction filter's response rolled off above 20kHz, reaching full stop-band suppression at 24kHz, just above half the sample rate (vertical green line). The aliased image at 25kHz of a 19.1kHz tone at 0dBFS (blue and cyan traces) is suppressed by more than 100dB, but the second and third harmonics of the 19.1kHz tone can be seen at –72dB and –82dB, respectively. The frequency response (fig.3) was flat up to 6kHz, with then a slow rolloff at all sampling frequencies that reached –2dB by 18kHz. The response then drops off sharply just below half of each sample rate. The right channel was 0.2dB higher in level than the left with both the balanced and unbalanced outputs.

Channel separation was >110dB in both directions below 1kHz, falling to a still good 87dB at the top of the audioband. The JS1 MkV's random noisefloor was lower in the right channel (fig.4, red and gray traces) than the left (blue, green traces), with a rise at very low frequencies in both channels. This graph is free from power supply–related spuriae; low-level spuriae are present in the right channel at 200Hz, 400Hz, and 800Hz, none harmonically related to the signal frequency of 1kHz. When I reduced the signal level by 10dB (green and gray traces), these spuriae also dropped by

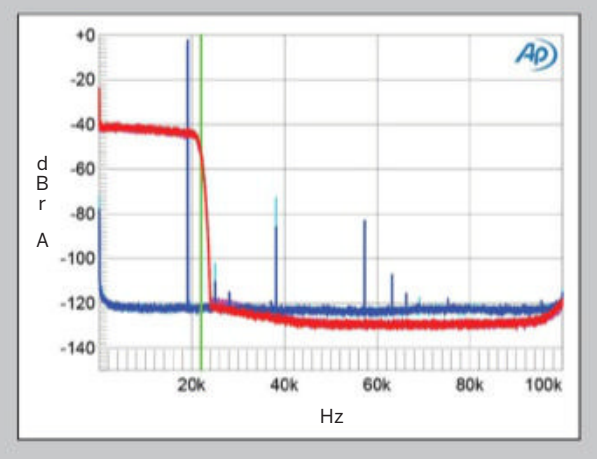

Fig.2 Jadis JS1 MkV, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with data sampled at 44.1kHz (20dB/vertical div.).

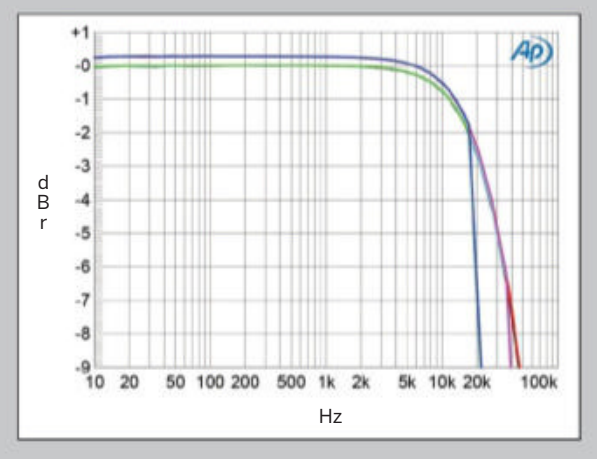

Fig.3 Jadis JS1 MkV, frequency response at –12dBFS into 100k ohms with data sampled at: 44.1kHz (left channel green, right blue), 96kHz (left cyan, right magenta), 192kHz (left gray, right red) (1dB/vertical div.).

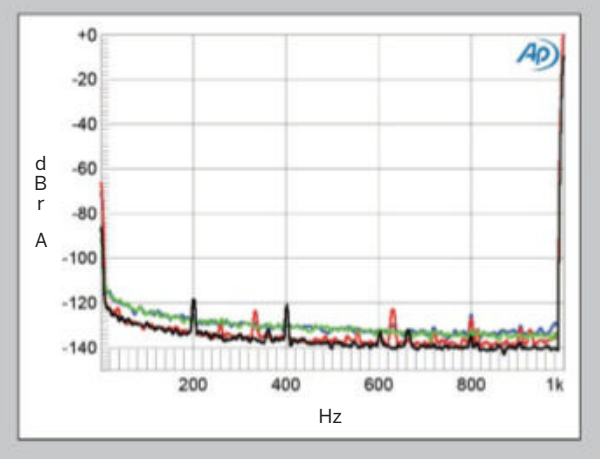

Fig.4 Jadis JS1 MkV, spectrum with noise and spuriae of dithered, 24-bit, 1kHz tone at 0dBFS (left channel blue, right red) and –10dBFS (left green, right gray) (20dB/vertical div.).

Every component of this audiophile-worthy high-fidelity stereo sound system is on display in this photo.

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POWER
1600 W RMS / 3200 W peak

DIMENSIONS / WEIGHT
12.6" diameter / 40 lbs each

THE PEARL AKOYA

(pictured) $1899 each

MAXIMUM SOUND LEVEL
115 dB mono, 121 dB stereo

BANDWIDTH
30 – 27,000 Hz

DESIGN
3 drivers, 3 amps

POWER
1050 W RMS / 2100 W peak

DIMENSIONS / WEIGHT
8.7" diameter / 18 lbs each

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on cooked pokeweed, a plant that's edible when young but soon grows deadly. The track was recorded on stage at the International Hotel in Las Vegas, and I could almost see the spotlight and Presley's white sequined jumpsuit. The JS1's Technicolor presentation put me in the front row. Listening to it, I was having almost as much fun as the band.

Second, the Jadis portrayed instruments and voices with more tonal richness and vivid colors than I imagined a digital component could. Listening to "Ahir Bhairav/Nat Bhairav" from *Call of the Valley* (16/44.1 AIFF rip from Saregama CDNF 150008), one of the most influential Indian classical (more accurately light-classical) albums of the last century, I was captivated by the saturated tone of Brijbushan Kabra's slide guitar and by how easy it was to tell it apart from the more metallic sound of Shivkumar Sharma's santoor. But it was Hariprasad Chaurasia's bansuri, a side-blown bamboo flute, that thrilled me most: Though I've heard the recording many times, I'd never heard Chaurasia's instrument sound so starkly beautiful and unmistakably woody.

Throughout our time together, the JS1 portrayed guitars, saxophones, trumpets, drums, and other instruments with remarkable vividness and materiality, making listening to acoustic music

The JS1 portrayed guitars, saxophones, trumpets, drums, and other instruments with remarkable vividness and materiality, making listening to acoustic music especially rewarding.

measurements, continued

around 10dB. Peculiar.

When I examined the Jadis's output spectrum with a dithered 1kHz tone at –90dBFS with 16- and 24-bit data (fig.5), the increase in bit depth lowered the noisefloor above 3kHz by 12dB in the left channel and 15dB in the right. This suggests that the JS1 MkV offers between 18 and 19 bits' worth of resolution. However, the level of random noise is higher at lower frequencies, which reduces the resolution to around 17 bits in the midrange and to less in the bass. With undithered data representing a tone at exactly –90.31dBFS (fig.6), the three DC voltage levels described by the data were well resolved. However, a slight DC offset appears to be present in both channels. As this offset changes with time, I believe it is due to the presence of very low-frequency noise. As a result, with undithered 24-bit data (not shown), the sinewave was slightly noisy.

The JS1 MkV's distortion spectrum consisted primarily of the second and third harmonics (fig.7). Their levels were around –70dB (0.03%), which will be subjectively innocuous. The graph was taken into the high, 100k ohms load; the processor's output clipped when I reduced the load impedance to 600 ohms. The Jadis JS1 MkV needs to be used with preamplifiers that have an input impedance of at least 10k ohms. Intermodulation distortion with an equal-level mix of 19kHz and 20kHz tones and a high load impedance was relatively low (fig.8), with both the second-order product at 1kHz and the higher-order products at 18kHz and 21kHz lying at –80dB (0.01%).

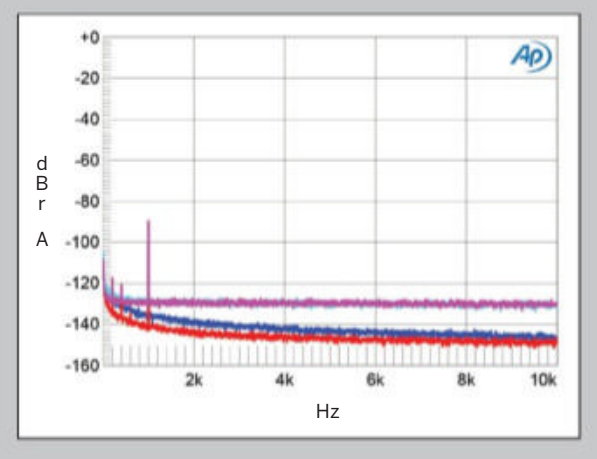

Fig.5 Jadis JS1 MkV, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).

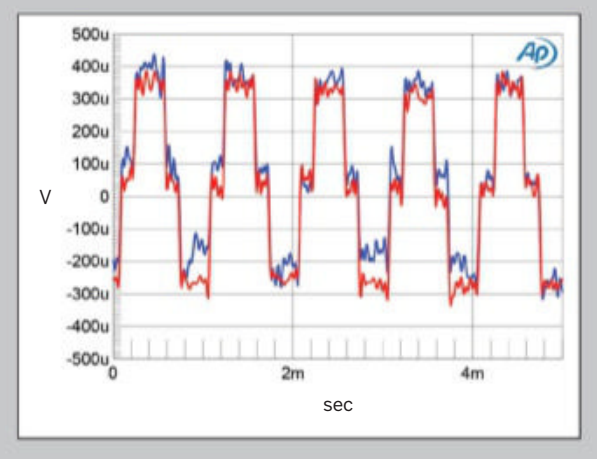

Fig.6 Jadis JS1 MkV, waveform of undithered 1kHz sinewave at –90.31dBFS, 16-bit data (left channel blue, right red).

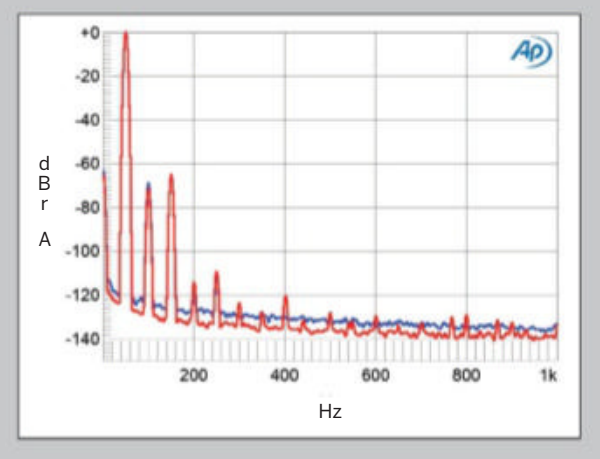

Fig.7 Jadis JS1 MkV, spectrum of 50Hz sinewave, DC–1kHz, at 0dBFS into 100k ohms (left channel blue, right red; linear frequency scale).

especially rewarding.

The French processor also excelled at tactility and presence. Listening to "Vieni fra queste braccia" from the 1975 recording of Bellini's *I Puritani* performed by the London Symphony Orchestra and the Chorus of the Royal Opera House under Richard Bonynge (24/96 FLAC, Decca/Qobuz), I'm always struck by the overwhelming range and power of Joan Sutherland and Luciano Pavarotti's voices, which are ideally suited to the bel canto material. Through the JS1, their voices sounded embodied and physical, a sensation that lent more humanity to the technically astonishing performances. The Jadis made the recording's ambient cues eerily present; singers moving across the stage became easier to follow. I might have actually flinched at the thunderclap at the beginning of Act 3.

The JS1's generous personality was particularly kind to indifferent and poor recordings, like *Hejira*, my favorite of Joni Mitchell's albums. Compared to *Blue*, an audiophile benchmark, *Hejira* makes Mitchell and her band sound remote, small, and tonally bleached. The Jadis performed a kind of sonic reanimation on this album: It supersized Mitchell to larger-than-life stature and restored the instruments' tonal heft and harmonics. Listening to the indelible title track, I marveled at the clarity of Mitchell's singing and the richness of Jaco Pastorius's melodic bass playing and was reminded that the performance—for all of Mitchell's genuinely profound lyrics—is actually a voice-bass duet. I choked up a little, because this was the finest sounding, most meaningful *Hejira* I'd heard, regardless of medium. Which brings me to a seemingly subtle point that's really not subtle at all: The JS1's ability to showcase flawed recordings in the best light never came at the expense of the music

ASSOCIATED EQUIPMENT

Analog sources Garrard 301 turntable in a Box Furniture Co. plinth; Thomas Schick 12" tonearm; Hana Umami Red cartridge; Ortofon SPU Classic G cartridge; Zu/Denon DL-103 cartridge.
Digital sources Sonnet Morpheus DAC; Sonore opticalRendu; Roon Nucleus+; Small Green Computer sonicTransporter i5 server running Roon Core.
Preamplification Shindo Aurieges preamplifier; Parasound Halo JC 3+ phono preamplifier.
Power amplifiers Shindo Montille; Line Magnetic LM-845IA; SET amplifier with triode-wired 307A output tubes, built by Oliver Sayes.
Loudspeakers Altec Valencia 846A; JBL 4367.
Cables Interconnect: Auditorium 23; Speaker: AudioQuest Thunderbird Zero, Auditorium 23; AC: AudioQuest Thunder and Hurricane; USB: AudioQuest Diamond; Ethernet: AudioQuest Diamond.
Accessories Box Furniture Co. Heritage stand; Box Furniture Co. amplifier stand; AudioQuest Niagara 3000 power conditioner; Sonore opticalModule; Sonore Audiophile Linear Power Supply; DJM Electronics GigaFOILv4-INLINE Ethernet filter; Vinnie Rossi MINI PURE-DC-4EVR 9V DC Power Supply; IsoAcoustics OREA Bordeaux isolation footers; Cardas Myrtlewood blocks; Dennesen Soundtractor cartridge alignment tool; AudioQuest Anti-Static Record Brush; Last Stylus Cleaner; VPI Industries HW-16.5 record cleaning machine.—**Alex Halberstadt**

measurements, continued

I tested the JS1 MkV for its rejection of word-clock jitter via its TosLink and AES3 inputs, using 16-bit J-Test data sampled at 44.1kHz. Some of the odd-order harmonics of the J-Test signal's LSB-level, low-frequency squarewave were close to the correct levels, shown by the sloping green line in fig.9, but others were either higher or lower in level. Also, a large number of sidebands are present. I initially assumed that these sidebands were power supply–related, but on examination they lie at ±85Hz and its multiples. When I repeated the test with USB data (fig.10), these sidebands were absent, which implies that they are due to idiosyncratic behavior of the Jadis's AES3 and S/PDIF receiver circuitry. And while most of the odd-order harmonics of the J-Test signal's low-frequency squarewave in fig.10 are now closer to the correct levels, those at ±229.6875Hz and ±459.375Hz are still too high. As the J-Test signal is not diagnostic with USB data, where the bit clock is not embedded in the data, the change in the levels of these sidebands has me at a loss regarding their cause. In any case, comparing figs.9 and 10 suggests that the Jadis processor will sound at its best using its USB input.

Other than the difference between the USB and the serial data inputs, the Jadis JS1 MkV's measured performance is dominated by the behavior of the tubed analog stage. To the presumably clean output of the AKM4497EQ DAC chip, it adds low-order harmonic distortion and a random noisefloor that increases in level at low frequencies. In other words: tube sound.

—John Atkinson

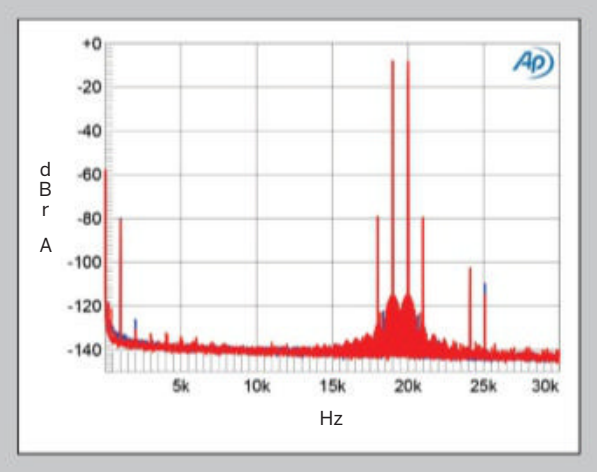

Fig.8 Jadis JS1 MkV, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 0dBFS peak into 100k ohms (left channel blue, right red; linear frequency scale).

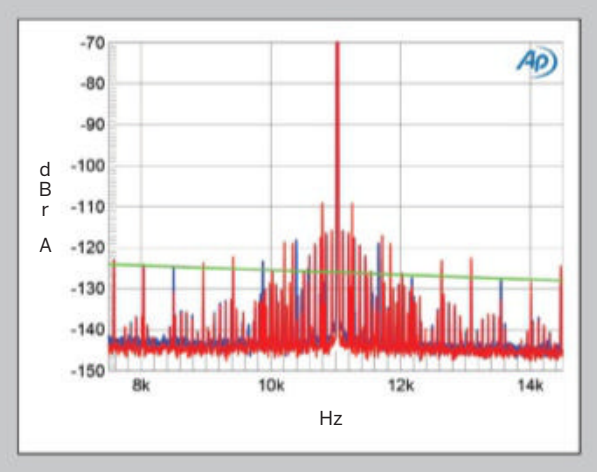

Fig.9 Jadis JS1 MkV, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit TosLink data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

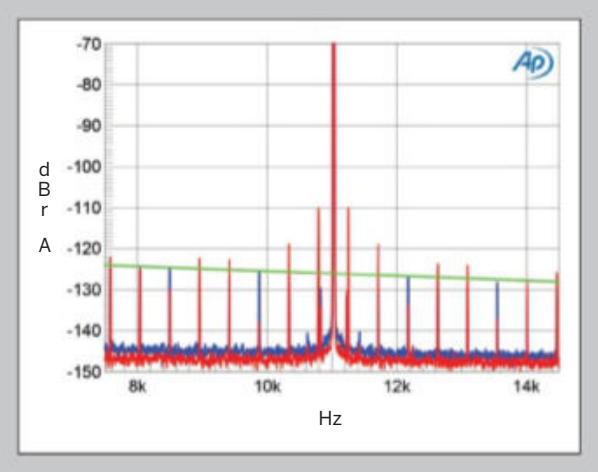

Fig.10 Jadis JS1 MkV, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit USB data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

and always served to enhance my understanding and appreciation of the performances.

There's no perfection in the world of things, and the one area where the Jadis left me wanting slightly more is detail. I want to be precise here: The processor never sounded overly warm, congested, or lacking in resolution, in the manner of some tubed digital components from the 1990s. It was simply a matter of balance. As much as I loved the JS1's spatially monumental, tonally saturated sound and compulsive listenability, I sometimes wished it dug a little deeper into the mix. It was like enjoying a rich, barrel-aged Chardonnay and wishing for a little more acidity.

When I replaced the JS1 with my Sonnet Morpheus, I immediately missed the French DAC's panoramic, flesh-and-blood sound. In comparison, the Morpheus projected a smaller soundfield, sounded less colorful and textured, and in general seemed to be having less fun. But it also offered more *apparent* resolution without losing track of the music and kept me slightly more engaged. Another way to say it is that I preferred the sound of the JS1 but found the Morpheus's more insightful balance a little more to my liking. In the end, choosing seemed unfair: I wanted both.

Conclusion

In considering whether the Jadis constitutes good value, I had to lay aside some qualms. Let me explain. Personally, I happen to think that a piece of audio gear that costs as much as the JS1 should make you feel like one of God's own angels is lifting you from a feather bed and bearing you straight to heaven. Still, $18,500 is not an unusual price in today's market, and given the JS1's superb engineering, build quality, and musical aptitude, it doesn't seem exorbitant. What it *does* do is place the JS1 in a rarefied field: This amount of money will buy you a well-engineered, excellent-sounding DAC from the likes of dCS, Weiss, Meitner, Lampizator, totaldac, Mola Mola, and others. And while I haven't been able to hear them all in my home, I can confidently say that the Jadis JS1 offers something that, if not unique, is at least highly distinctive: a digital source that uses tubes to offer a rich, colorful, tactile, propulsive sound, state-of-the-art soundstaging, complete freedom from digital artifacts, and an ability to breathe life into just about any recording. If that's what you're looking for, a world of fun awaits. ■

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WHAT OBSESSION SOUNDS LIKE

KEN MICALLEF

Pro-Ject Debut PRO

RECORD PLAYER

I enjoy few things more than setting up a turntable. Whether it's for myself or for a friend—whether it's a budget model with a layered MDF plinth and nonadjustable tonearm, or a megabuck, state-of-the-art behemoth—I relish the ritual.

Back in the day, I used to huff and puff, scream and shake, thanks to the heebie-jeebies I'd get when attempting to raise a turntable to ultimate performance. But with experience comes wisdom. My buddy and *Sound & Vision* contributor Michael Trei makes turntable setup look like child's play. I've learned by watching Mike that, when a turntable setup tries your patience, the thing to do is keep calm and carry on.

Once you've dialed in all the setup parameters, including leveling, cartridge alignment, azimuth, tracking force, and VTA, you can savor the beauty of music. It's *that moment* I crave. No matter a particular 'table's position in the audiophile food chain, I always enjoy hearing what it can extract from my beloved vinyl grooves.

Every turntable, like every other audio component, imbues the music with its own personality. I delight in that second when the stylus is gently lowered to the record's surface and it begins to give up its secrets. A turntable is a time machine that can bring endless years of enjoyment to you, your family, and your friends. Even your descendants.

Turntable as family heirloom? My Thorens TD 124 was originally the property of the aunt and uncle of *Stereophile* Senior Contributing Editor Kalman Rubinson. Kal gave it to them as part of a dedicated mono system with an Eico integrated amp and single JBL speaker. They returned the turntable to him in 1995 and, not long after Art Dudley became *Stereophile*'s deputy editor in 2015, Kal gave it to him, knowing he would find a good home for it. He did: It ended up at my Greenwich Village apartment. My Thorens

SPECIFICATIONS

Description Belt-driven turntable with electronic speed control, tonearm, Sumiko Rainier MM cartridge ($149 separately), and dust cover. Speeds: 33 1/3/45/78rpm; 78rpm requires a belt change). Platter: 300mm die-cast aluminum platter with TPE damping inlay and felt mat. Platter bearing: stainless steel axle in bronze bushing. Wow and flutter: 33 1/3: ±0.16%; 45: ±0.14%. Speed drift: 33 1/3: ±0.40%; 45: ±0.50%. S/N ratio: 68dB. Tonearm: 8.6" one-piece hybrid carbon-aluminum; effective length, 218.5mm; effective mass, 10gm; overhang, 18.5mm. Included accessories: 15V DC/0.8A power supply, dust cover, 78rpm round belt, 7" single adapter, paper tonearm alignment guide, plastic cartridge weight gauge, interconnects.
Dimensions 16.3" wide (415mm) by 4.4" high (113mm) by 13" deep (320mm). Weight: 13.2lb (6kg).
Serial number of unit reviewed None visible. "Handmade in Europe."
Price $999. Number of US dealers: 300. Warranty: Two years.
Manufacturer Audio Tuning Vertriebs GmbH, Pro-Ject Headquarters, Wirtschaftspark A5, Analogweg 1, 2130 Mistelbach, Austria
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is both a part of my reference system and an enduring audio legacy.

When I was assigned to review the Pro-Ject Debut PRO, I gathered my tools in excited anticipation of its arrival, even knowing that it would be set up by the factory. Priced at $999 including a Sumiko Oyster Rainier moving magnet cartridge, which costs $149 a la carte, the Debut PRO has been issued to celebrate Pro-Ject's 30-year anniversary as a manufacturer of turntables. Consider the timing: Pro-Ject was formed in the early 1990s, a time when vinyl records were nearing extinction. They've survived and thrived since. That's 30 years during which they've delivered hundreds of thousands of turntables to music lovers across the world.

Design

Handmade in a Pro-Ject factory in the Czech Republic, near the Pro-Ject HQ outside Vienna, the Debut PRO has attributes not often seen in turntables at its price, including a heavy, diecast-aluminum platter with internal damping, a steel bearing assembly flange, a nickel-coated aluminum bearing block, a hybrid aluminum–carbon fiber tonearm, adjustable azimuth and VTA, and leveling feet.

I was consistently surprised at the Debut PRO's ability to relay gobs of detail in a natural, compelling manner.

Based on Pro-Ject's best-selling Debut Carbon EVO turntable, which itself replaced the Debut Carbon DC, the Debut PRO improves on earlier Pro-Ject models with CNC-milled aluminum parts, an upgraded tonearm and bearing, and a few more subtle but still beneficial upgrades. Most of its aluminum parts are nickel-plated in-house, which increases wear and corrosion resistance, and may—depending on the specific process—increase rigidity. The brushed-nickel finish of some of the exposed metal parts also complements the plinth's matte-black paint.

That plinth is compact: 16 3/8" wide, 12 1/2" deep, and 1 1/4" high. It's constructed of a solid block of MDF, machined in-house and coated with seven layers of matte-black paint, Pro-Ject Brand Director Buzz Goddard told me in an email. The website says eight coats. During its stay at Ken's crib, the smooth-to-the-touch surface of the Pro-Ject plinth resisted smudges and fingerprints.

The Debut PRO's precisely balanced, 3lb, 300mm diameter, 3/4"-thick platter is damped by a 1/2"-wide strip of thermoplastic elastomer (TPE) sunk into the underside near the outer rim, damping resonance. Pro-Ject says this reduces wow and flutter. That platter is attached to a stainless-steel shaft that nestles into a bronze bushing and rides on a polytetrafluoroethylene (PTFE) thrust pad.

The platter is driven via a nylon subplatter connected by a flat silicone belt to an aluminum pulley atop an AC motor that's decoupled from the turntable's base with thermoplastic elastomer bushings. A separate, round silicone belt is supplied for dedicated 78rpm playback.

That motor is AC, driven by "an advanced version of the original Speedbox, which was an upgrade for turntables that provided additional speed stability and electronic speed change," according to Goddard. "The motor is affixed to a steel plate, which serves as an excellent shielding."

A felt mat is included, as is an acrylic dustcover, which I didn't use because plastic dustcovers, whether pitched up or down, can become devilish resonance chambers![1]

The Debut PRO is supplied with an 8.6", carbon-aluminum hybrid tonearm. "The carbon layer gives the tonearm a high degree of rigidity, while the inner aluminum tube is responsible for the damping of the tonearm," says the website. The gimbal-styled arm's counterweight and cueing lever are made of aluminum; the bearing block is of nickel-plated aluminum. Along with an antiskate weight shaped like a tiny buoy, the tonearm has a steel-flange base, a surprising inclusion at this price. A small, threaded hole is set into the base for setting VTA with a supplied Allen key. Another small hole allows azimuth to be adjusted; both VTA and azimuth are set at the factory.

The Pro-Ject Debut PRO looks classy, minimalist, unassuming. It's available in just one color: black. An aluminum toggle switch on its front left corner turns it on and off and selects the rotation speed: left for 33 1/3 rpm; right for 45 or 78rpm, depending on the belt fitted and the pully used. On the back panel, there's a grounding screw, a pair of gold-plated RCA jacks—a 1m pair of Pro-Ject manufactured copper interconnects is supplied—and a power receptacle. By default, that receptacle connects to a "universal" (multivoltage, multifrequency) power supply. The Power Box DS2 is available as an upgrade. Support is provided by those height-adjustable feet, which are PTE-damped, nickel-coated aluminum.

Pro-Ject offers the best quick-start, step-by-step turntable setup guide I've ever seen, with excellent photographs featuring small green arrows signifying *this goes there*. It's available at their website. Pro-Ject *gets* analog hi-fi, which helps explain their longstanding significance in the market. An in-depth manual, which provides a deep dive into setting VTA, VTF, azimuth, and antiskate, is also available on the Pro-Ject website.

Setup

With the benefit of two setup guides—a quick-start version and the in-depth manual—it was easy to get up and running with the Debut PRO. Removing the turntable and its various parts from the box, I positioned it atop an IKEA Aptitlig bamboo board on three stacks of small mahogany squares—three to a stack. I leveled the 'table using its three leveling feet and a carpenter's level and connected the interconnects and power cord.

1 On the other hand, if used as intended when the 'table is idle, then removed during play, they're very good at reducing dust—so, best to remove them completely and set them aside during use.**—Jim Austin**

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WHAT OBSESSION SOUNDS LIKE

Using my Dr. Feickert Analogue Universal Protractor, I found that the Rainier cartridge was aligned correctly at the factory. But when I measured the tracking force using a Riverstone Audio Precision Record-Level VTF gauge, I found it tracked too heavy. When I measured VTF again using the Pro-Ject–provided gauge, I measured the specified 2.0gm. However, as set at the factory—and with the Pro-Ject gauge—the music sounded too heavy and mildly bombastic. Setting it with the Riverstone gauge—a bit lighter—produced a cleaner, more spatial, more coherent sound. Azimuth and VTA were spot on.

Late in the review period, I replaced the included Oyster Rainier MM cart with Sumiko's new Rainier Wellfleet MM cart. Upon arrival, both cartridges were protected by a hard plastic sheath, which covered its entire surface except the connection pins. This allowed me to get a good grip on the cartridge and not worry about touching the stylus. *Brilliant!*

In my system, an 8' pair of Auditorium 23 speaker cables linked the Golden Ear BRX (90dB into 8 ohms), Polk Audio Legend L100 (85.5dB into 3–4 ohms), Spendor BC1 (84dB into 8 ohms), or DeVore Fidelity Orangutan O/96 loudspeakers (96dB into 10 ohms) to the Parasound Hint 6 Halo (160Wpc into 8 ohms, 240Wpc into 4 ohms) or Schiit Ragnarok 2 (60Wpc into 8 ohms, 100Wpc at 4 ohms) integrated amplifiers. In both cases, I used the integrated amplifiers' built-in phono stages. For comparison, I spun vinyl on my Thorens TD 124 turntable with Jelco 350S tonearm and Clearaudio Concept MC cartridge. Finally, to get a fix on the Sumiko Rainier's sound, I mounted it on the Jelco/Thorens and ran the output into the Parasound integrated amplifier.

In some ways, the Pro-Ject sounded like a miniaturized version of my much more expensive Kuzma Stabi R.

Listening

When I lowered the stylus onto a record, the Debut PRO greeted me with fast transients, strong dynamics (when present on the recording), and crisp highs, from upper midrange to treble. It reproduced cymbals, snare drums, strings, brass, vocals, and synthesizers with punchy attack and well-defined leading edges. Images of instruments and voices were precise. The Debut PRO is a lively, fun, exhilarating turntable; it makes records—or rather music from records—jump, boogie, and sing.

While the Debut PRO/Rainier combo sparkled on upper midrange to treble reproduction and its midrange was clear, lower frequencies were a little soft compared to my higher-end Thorens and Kuzma turntables; nor did it present the dense tonal palette and sonic weight of my reference 'tables. Nevertheless, it acquitted itself *extremely* well in its own right. The Debut PRO is designed for the party animal with an audiophile music-lover's heart.

Joined to the Schiit Ragnarok 2 integrated amp and Golden Ear BRX speakers—two clear, crisp-sounding products—the Debut PRO intensified the speedy release and brisk note attacks of *Boulez Conducts Varèse: Amériques / Arcana / Ionisation* (LP, Columbia Masterworks M 34552), an orchestral-percussion extravaganza reproduced with exacting leading edges, knockdown dynamics, and a wide soundstage. It was almost too much. I noticed surface noise on some LPs that went unnoticed on my other turntables.

The Debut PRO hit its stride on Binker & Moses's *Journey to the Mountain of Forever* (LP, Gearbox Records GB1537OBI). The British duo's 2017, tenor-sax-and-drums release is a modestly avant-garde series of improvisations reproduced with good spatial depth and plenty of air; the Pro-Ject/Schiit/BRX combo got it right and framed *Journey to the Mountain of Forever* with great energy and midrange bloom. Occasionally the BRX's ribbon tweeter became a little glary.

Switching out the BRX for the Polk Legend L100 speakers emphasized the clarity and focus of the Debut PRO's midrange with some loss of detail and upper-level air and resolution. With the Polks in line with the Debut PRO, music sounded more lucid and natural than through the BRX speakers. The Boulez disc benefitted from the Pro-Ject/Polk pairing, with softer treble and a more coherent, fleshier sound and with improved soundstage width and depth. The Debut PRO didn't confuse or compress the heaving dynamics of the Boulez disc; it consistently reproduced every *ppp* and *fff*. It doesn't do scale quite as well as my reference 'tables, but it comes closer than I'd have expected. The Debut PRO is coherent and *very* communicative, regardless of ancillaries.

The listening party continued with the Pro-Ject/Polk pairing. I spun vinyl by Air, Stravinsky, the Great Jazz Trio, Squarepusher, and Billy Cobham. The Debut PRO heightened surface noise on Air's *Talkie Walkie* (Virgin V2980) but otherwise rendered the sound of the French duo's honeyed synths and pulsing beats as well as I've heard. The Pro-Ject reproduced 1967's *Stravinsky Conducts Firebird Suite / Petrushka Suite* (Columbia Masterworks MS 7011) with warmth and body allied to refinement and delicacy; sub-$1000 tables typically do one or the other if they're lucky. The Great Jazz Trio's 1978 release *At the Village Vanguard* (East Wind EW-8053) was full-bodied, with excellent cymbal and piano note decay and definition and good, if light, reproduction of acoustic bass. I was consistently surprised at the Debut PRO's ability to relay gobs of detail in a natural, compelling manner.

The Debut PRO produced surprises while spinning Billy Cobham's '70s fusion masterpiece *Spectrum* (Atlantic SD 7268). I know this warhorse like the smell of my Greenwich Village street in summertime; I can sing along (or make songlike noises) to every swirling Jan Hammer synth spew and wailing Tommy Bolin scrawl. I've owned various versions of *Spectrum*, from the original LP to the early CD (where's the RSD version with extra tracks?!!). Playing *Spectrum*'s "Stratus," powered by a hard-driving 16th-note drum groove propelled by Lee Sklar's electric bass, Cobham's two-and-four snare drum *crack*! is produced with a long-tailed decay,

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probably a Maestro Echoplex or Roland Space Echo effect. The Debut PRO wrestled this minor sonic detail out into the open. A $149 moving magnet cart on a $999 turntable (and included in the price!) did this.

Keeping the Polks in line and exchanging the Schiit for the Parasound Hint 6 Halo, including the Hint 6 phono stage, the music went flat. I don't know why. System-matching matters. You can't just throw a dart (or two) at *Stereophile*'s Recommended Components list and put together a system that makes magic.

So then I replaced the Polks with my Spendor BC1s. Synergy restored.

With the Spendors driven by the Parasound, I could hear the Debut PRO's bass more clearly and with greater weight, though it was still soft. I felt that I was now hearing the full breadth of the Pro-Ject's sound, from the clear, tactile treble through the strong midrange to its softer low end. In some ways, the Pro-Ject sounded like a miniaturized version of my much more expensive Kuzma Stabi R. It's a fun 'table, with heart and soul.

The new Sumiko Wellfleet MM cartridge that Buzz Goddard provided ($449) improved the Debut PRO's performance considerably. Clarity and soundstage depth improved. Bass became much more focused, suggesting that the provided cartridge was at least partly responsible for the softness I'd heard.

I put on "Take the 'A' Train," from Shelly Manne's outrageously great 1962 recording *2-3-4* (Impulse! AS-20), with Coleman Hawkins on tenor sax, Hank Jones on piano, Eddie Costa on vibraphone, and George Duvivier on bass. Gone was the annoying surface noise. That slight haziness and soft bass were transformed into clear, tightly delivered notes from Jones's lower piano notes, Manne's toms, and especially Duvivier's bass. The Debut PRO retained its agile, dynamic, energetic demeanor—indeed, that character was amplified with the Wellfleet—while gaining a good bit of heft.

But don't assume that the provided Rainier cart just isn't very good. When I put it on my Thorens/Jelco combo, I heard that same fantastic detail retrieval, upper midrange/treble energy, and sharp focus, but the Thorens/Sumiko combo bettered the Pro-Ject/Sumiko combo with a wider, more spacious soundstage, longer note decays, tighter, cleaner bass—apparently the fault for the soft bass on the Pro-Ject/Rainier combo is shared—improved definition and imaging, and a greater sense of drama, scale, and envelopment. The Sumiko would be an obvious choice to upgrade the ubiquitous Ortofon 2M Red.

I couldn't wait to spin some 78s. So I slipped that 78rpm stylus on the Rainier and hit the bins at Jazz Record Center, which I run most Saturdays. Don't tell JRC owner Fred Cohen, but I borrowed shellac by Billie Holiday, the Charlie Parker All-Stars, Zoot Sims, and one heavy 10" credited to "Miles Davis–Charlie Parker."

In the right system, 78s can produce a powerful, direct blast of sound that can cut through lead. Choosing the cleanest looking shellac of the bunch, "Bird Gets the Worm"/"Cheryl" (Savoy 952) by the Charlie Parker All-Stars, the sound was bracing. The Stars—Charlie Parker (alto), Tommy Potter (bass), Max Roach (drums), Duke Jordan (piano), and Miles Davis (trumpet)—constitutes perhaps the greatest bebop band of all time. Somehow, via 78, these blazing, high-velocity tunes sounded more natural and real than I've previously heard. Depth was good. Tone was okay. The dynamics were insane. I could easily fall down the 78 rabbit hole with some more good shellac and the Pro-Ject Debut PRO.

ASSOCIATED EQUIPMENT

Analog sources Thorens TD 124 turntable/Jelco 350S 9" tonearm/Clearaudio Concept MC phono cartridge.
Integrated amplifiers Parasound Hint 6 Halo, Schiit Audio Ragnarok 2.
Loudspeakers DeVore Fidelity O/96, Spendor BC1, Golden Ear BRX, Polk Audio Legend L100.
Cables Interconnect: product's own. Speaker: 8' pair Auditorium 23.
Accessories Pro-Ject VC-S2 ALU Record Cleaning Machine; Audiodesksysteme Vinyl Cleaner Pro LP Cleaning System; Hunt Mark 6 Carbon Fiber Record Cleaning Brush; RTOM Moongel Drum Damper Pads (as stylus cleaner); Kuzma Platis 65 isolation platform; IsoTek EVO3 Aquarius line conditioner; Salamander five-tier rack (two); IKEA Aptitlig bamboo chopping boards (under turntable); mahogany blocks (2" × 2" × 0.5") under boards. —**Ken Micallef**

Conclusion

This *ca* $1000, handsome-but-unassuming record player proved to me what a manufacturer with decades of experience and expertise can do when designing an analog machine to a price point. The Debut PRO bowled me over with its dynamics, detail, soundstaging, spatial depth, and scale, especially with the more expensive Wellfleet cartridge. The Debut PRO made the most of every style of music I put to it. One could hope for a better mat, but the white looks cool, and changing it out is easy and cheap.

If you're in the market for a $1000 turntable, the Debut PRO is an easy choice. ■

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JULIE MULLINS

iFi Audio ZEN DAC Signature V2 and ZEN CAN Signature

D/A CONVERTER AND HEADPHONE AMPLIFIER

It had been a while since I'd done any serious, *critical* listening through headphones. That changed when Editor Jim Austin asked if I wanted to review the iFi Audio ZEN Signature Set ($599). Figuring I could use more Zen in my life, I agreed.

UK-based iFi Audio, which operates under the auspices of the Abbington Global Group, has released several compact products in its ZEN series: DACs, headphone amps, a Bluetooth receiver, and a network streamer.

Available in two iterations, the iFi Audio ZEN Signature Set consists of two boxes in a single cardboard sleeve: the ZEN DAC Signature (upgraded to V2 status mere weeks after the V1 release) and one of two versions of the ZEN CAN Signature headphone amplifier: either the ZEN CAN Signature

SPECIFICATIONS

ZEN DAC SIGNATURE V2

Description Digital-to-analog converter with XMOS 16-core processor and fully balanced dual-mono circuitry; DAC: Burr-Brown Bit-Perfect DSD & DXD DAC. Input: USB 3.0 (USB 2.0 compatible); Input voltage: DC 5V/2.5A (external power supply included); Outputs: Balanced 4.4mm, 2V/6.2V max. variable, 4.2V fixed; Unbalanced RCA, 1V/3.3V max. variable, 2.1V fixed. Formats: PCM 44.1/48/88.2/96/176.4/192/352.8/384kHz; DSD 2.8/3.1/5.6/6.2/11.2/12.4MHz 353/384kHz DXD; MQA decoding and rendering. Analog volume potentiometer, volume fixed or variable.
SNR: <116dB(A) @ 0dBFS (Balanced/Unbalanced).
THD: <0.00015% @ 0dBFS (Balanced/Unbalanced).
Dimensions 6.2" (157mm) W × 1.4" (36mm) H × 4.6" (117mm) D. Weight: 1.11lb (505g).

ZEN CAN SIGNATURE (HFM OR 6XX)

Description Headphone amplifier with fully balanced circuitry, analog volume control (9mm potentiometer), and EQ correction optimized for HiFiMan 4XX or Sennheiser HD 6XX and HD 650 headphones. Analog inputs: 4.4mm Pentaconn balanced, 3.5mm single-ended RCA; Analog line outputs: 4.4mm Pentaconn balanced; Headphone outputs: 4.4mm balanced, 6.3mm single-ended.
Frequency response: 10Hz–200kHz (–3dB). Gain: 0dB, 6dB, 12dB, 18dB. SNR: Balanced >121dB (A-weighted @15.2V); Single-ended >120dB (A-weighted @7.6V). THD: Balanced <0.006% (@360mW/2.4V 16 ohm); Single-ended <0.005% (@100mW/1.27V 16 ohm).
Input voltage: 5V/2.5A (power supply included). Max. output: Balanced >15.1V/385mW (@600 ohm), >11.0V/1890mW (@64 ohm), >6.2V/1200mW (@32 ohm); Single-ended >7.6V/98mW (@600 ohm), >7.4V/870mW (@64 ohm), >7.2V/1600mW (@32 ohm).
Dimensions 6.2" (157mm) W × 1.4" (36mm) H × 4.6" (117mm) D. Weight: 1.21lb (550g).
Serial number of units reviewed 5312001087/5501000735; ZEN DAC Signature V2, 5320000008. Designed in the UK and assembled in China.
Price ZEN CAN Signature Set (HFM or 6XX) $599; iEMatch $49. Approximate number of US dealers: 43 B&M plus several online. Warranty: 12 months.
Manufacturer
AMR/iFi Audio
Guildford
79 Scarisbrick New Road
Southport, England, PR8 6LJ
Tel: +44 (0) 1704 543 858
US office:
105 Professional Pkwy.
Suite 1506
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6XX, or the ZEN CAN Signature HFM. Each has a custom EQ curve optimized for a different pair of headphones. "6XX" designates the Sennheiser x Drop HD 6XX and HD 650 headphones; the newer (though both are quite new) CAN Signature HFM is optimized for the HiFiMan x Drop HE4XX 'phones. Apart from the optimized EQ curves, the two versions contain identical circuitry. I auditioned both.

Owners of headphones from other brands, fret not: The ZEN CAN Signature amplifiers are intended to be used with a wide range of headphones; everything but the custom EQ curve is still applicable.

Design and setup

I'm told that smooth, river-flattened stones inspired the ZEN components' design. Despite their quasi-ovoid shape, they're built to stack, with tiny rubber feet offering assistance. The ZEN units' gentle curves and black, textured, slightly recessed faceplates contrast with their deep-blue matte finish. Their form is retro-modern, slightly Space Age—although they're too trapezoidal to resemble flying saucers.

The ZEN DAC Signature V2's front panel is minimal, with just a single (defeatable) volume knob in the center. Behind the dial, a discreet LED changes color to indicate audio format and sampling frequency of the signal the DAC is receiving: white for PCM 88.2kHz to 384kHz, red for DSD 256, green for MQA, and so on.

The back panel has a toggle switch for fixed or variable volume. The digital input is asynchronous USB Type B, USB 3.0 (2.0 compatible). Analog outputs include a single balanced Pentaconn 4.4mm connection and an unbalanced RCA pair. There's no on/off switch; if you want it all the way off, unplug it.

iFi publishes the make of many parts used in the DAC Signature V2—a bold move in an era of parts shortages. Panasonic OS-CON, TDK C0G (Class 1 ceramic), and ELNA Japan Silmic II capacitors are used. A Burr-Brown True Native DAC chipset. The potentiometer is by Tokyo Cosmos Electric Company (TOCOS). The DAC Signature V2 version now uses an iFi-programmed 16-core XMOS chip; the short-lived, recently replaced original version used an 8-core XMOS. The upgraded 16-core chips provide more processing power, enabling full MQA decoding and rendering, whereas the original did only rendering, the company told me in an email. (All applicable iFi products are receiving the XMOS update.) To improve jitter performance, the ZEN Sig V2 DAC's crystal clock received updates said to provide a 20dB reduction in clock phase noise.

The ZEN CAN Signature headphone amplifier has the same analog volume control dial as the DAC Sig V2, based on the same TOCOS potentiometer. Also on the front are small pushbuttons for power on/off, input switching, gain levels (0dB, 6dB, 12dB, 18dB), and activation of iFi's XSpace feature, which is intended to expand the perception of space and get the music outside your head. The same button turns on and off the optimized EQ curve for the intended HD 6XX (or HD 650) or HiFiMan HE4XX headphones, depending on which kit you buy.

A few cables are included with the Signature Set: an interconnect with USB Type A to Type B, which I used to connect my laptop, a pair of RCA-to-RCA interconnects of respectable quality, and a balanced 4.4mm-to-4.4mm Pentaconn cable to join the DAC V2 with the CAN amp in the iFi-recommended balanced configuration. The DAC and CAN each come with a 5V DC power supply, a more attractive design than "wall wart" suggests.

There's no Bluetooth. I didn't miss it.

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In use

I played music mainly through Roon (version 1.8, build 831), both from stored files (downloads; CD rips) and streaming from Qobuz and Tidal. My MacBook Air (M1, 2020) served as the Roon Core.

Setup was straightforward, nearly plug and play—unless you're using a Windows computer as a source, in which case you must download and install drivers for the DAC. It's easy; drivers and firmware updates are available on iFi's website.

In Roon's settings, I added the iFi ZEN as "CoreAudio." Under Settings > Audio, the specific device was unidentified but was listed as "iFi (by AMR) HD USB Audio." I selected "Decoder and renderer" as its MQA capabilities, as the DAC Signature V2 can handle full MQA decoding and playback. Because I'm on a Mac, I set the DSD playback strategy to "Convert to PCM," as recent Mac OS versions don't support native DSD, regrettably. The ZEN gear worked seamlessly with Roon.

The ZEN duo served the hard-hitting percussion on "Memphis" well.

A sensitive issue

IFi sells these specific components—the DAC and the amplifier—together, to be used with a third specific component: those specific HiFiMan or Sennheiser headphones. And yet, early in my auditioning, using them precisely that way (and also with similarly specified 'phones), I found the output levels to be on the high side for comfortable listening at the recommended volume-control settings: TOCOS, which makes the potentiometer used to control volume in the amplifier (and also in the DAC), recommends using it at 11 o'clock or higher for optimal channel matching—a fact plainly displayed on the iFi website. Plus, an insert in the package said that "at normal listening levels, the the volume control should be around the 12 o'clock position." With the headphones I used—including the headphones specifically recommended as partners for these amplifiers—I found myself listening with the volume control at 10 o'clock or lower; if it got much louder, I started to find the volume *uncomfortably* loud.

What's more, the iFi website contains a headphone-matching calculator,[1] which allows you to choose an amp and a pair of headphones and determine whether (gain-and-sensitivity-wise) they're a good match. Doing that exercise with the two versions of the ZEN CAN and their intended headphones, the calculator advised me that, connected directly, with no attenuation, they're *not* a good match: The volume would be too loud—unless you add another iFi device, the iEMatch, an inline attenuator that's used between

1 See ifi-audio.com/home-2/headphone-calculator.

MEASUREMENTS

I measured the iFi ZEN CAN's and ZEN DAC Signature's performance with my Audio Precision SYS2722 system (see the January 2008 As We See It[1]). Looking first at the ZEN CAN, I measured two versions. One, labeled "6XX," with the serial number 5501000735, included equalization for specific Sennheiser headphones. The other, labeled "HFM," with the serial number 5312001087, included equalization for specific HiFiMan headphones.

Other than the equalization, the two versions of the ZEN CAN measured identically. The maximum gain for unbalanced input signals was 0dB, 6dB, 12dB, or 18dB, as specified, from the single-ended headphone output and 6dB higher in each case from the balanced headphone output. Both the balanced and unbalanced outputs preserved absolute polarity (ie, were noninverting). The unbalanced input impedance of both samples was >400k ohms at 20Hz and 1kHz, dropping to a still high 78k ohms at 20kHz. (I wasn't able to measure the balanced input impedance, as the Pentaconn adapter cable I bought from Amazon had the wrong gender XLR plugs, and I didn't have time to order another adapter before the review samples had to be returned to Julie Mullins.) The ZEN CAN's unbalanced output impedance was a very low 0.75 ohm from 20Hz to 20kHz. The balanced output impedance was 1 ohm, again from 20Hz to 20kHz.

With equalization bypassed, both versions of the ZEN CAN had an identical frequency response: flat from 10Hz to 50kHz from both balanced and unbalanced outputs (fig.1, cyan and magenta traces), with the ultrasonic rolloff reaching –1dB at 150kHz. The 6XX and HFM versions had different responses with the equalization active. The 6XX equalization (fig.1, blue and red traces) featured a narrow 3.8dB boost at 6kHz and a gently rising response above 10kHz. The HFM equalization (green, gray traces) had a broader 4.1dB boost centered on 2kHz, and while both equalizations had a rising response below 200Hz, that of the 6XX version was a little higher in amplitude over most of the bass region.

Fig.1 was taken with the ZEN CAN versions' volume controls at the maximum setting and the gain set to 18dB. The channel matching was within 0.02dB and the frequency response didn't change at lower settings of the control. However, because JMu had reported hearing differences in the

1 See stereophile.com/content/measurements-maps-precision.

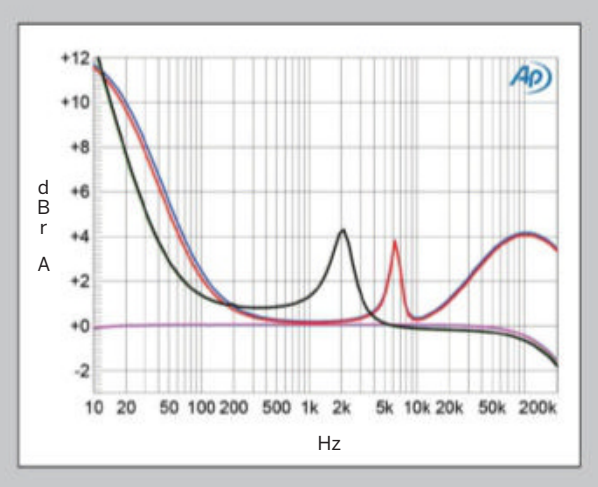

Fig.1 iFi ZEN CAN 6XX and HFM, balanced frequency response with volume control set to the maximum and no EQ at 1V into 300 ohms (left channel cyan, right magenta); the 6XX with EQ active (left blue, right red); and the HFM with EQ active (left green, right gray) (2dB/vertical div.).

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amplifier and headphones. The iEMatch costs $49; two other versions, the iEMatch+ (which can switch between single-ended and balanced operation) and iEMatch 2.5 (which has 2.5mm balanced connections) each cost $59. Neither is included in the ZEN DAC/CAN package.

I noticed the iEMatch as I explored the iFi site and asked iFi to send me one. They did, and after that—with the iEMatch inline—no more problems with too much gain.

Why, when two components are sold together, intended to be used with a specific third component, is an attenuator needed to make it work that way? I don't know. But if you plan on buying one of the ZEN Signature combos—and it is, otherwise, a fine, affordable headphone setup—be sure to check the iFi headphone calculator first; you may want to add an iEMatch to your order.

Listening

The Signature Set's ZEN DAC V2 and ZEN CAN headphone amp pack a punch, with high resolution, output, and impact. At least relative to the demands of the headphones I was using, the CAN is a powerful amplifier.

measurements, continued

level of the channels at lower settings of the volume control, I investigated the HFM version's channel matching across its volume control's range. With the volume control set to –10dB and –30dB, the right channel was 0.5dB higher than the left and the right channel was 1dB higher than the left at –40dB. The lowest volume control setting I could investigate was –45dB, which was with the volume control set to 7:00. At that setting, the right channel was 3.3dB higher in level than the left. I understand that iFi recommends not using the volume control lower than 11 o'clock, which is equivalent to an attenuation of 20dB and where the channel levels matched to within 0.03dB.

The iFi preamp's channel separation was >70dB in both directions below 1kHz but decreased in a linear manner as the frequency increased, reaching a disappointing 33dB at 20kHz. (Both versions behaved identically in this respect.) The level of the ZEN CAN's noisefloor varied with the gain setting. The blue and red traces in fig.2 show the spectrum of the HFM version's balanced output with the gain set to 18dB; the green and gray traces show the spectrum with it set to 0dB, but with the 1kHz input signal increased in level to give the same output. The random noisefloor drops by 10dB at the lower gain setting, but the supply-related spuriae at 60Hz, 180Hz, 300Hz, and 540Hz are reduced by approximately the same 18dB as the reduction in gain.

The wideband, unweighted signal/noise ratio, measured at the balanced output with the unbalanced input shorted to ground, the gain set to 0dB, and the volume control set to its maximum, was a very high 91.2dB ref. 2V output (average of both channels, which were very similar). Restricting the measurement bandwidth to the audioband increased the S/N to a superb 110.8dB, while switching an A-weighting filter into circuit further improved the ratio to 113.5dB. With the amplifier's gain set to its maximum, these ratios decreased by 18dB but were still excellent. These S/N ratios were taken with the HFM version; the 6XX version's ratios were approximately 6dB lower in both gain settings.

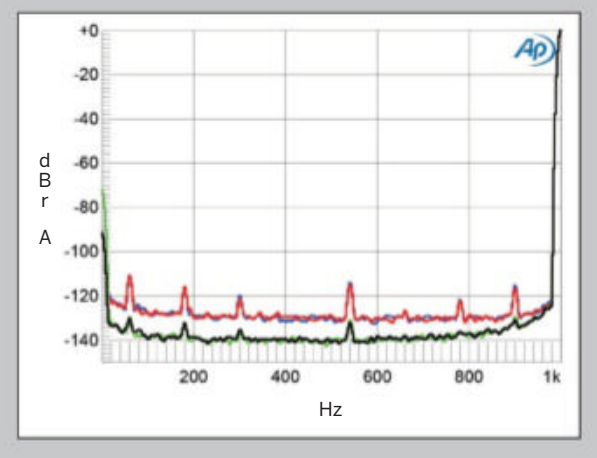

Fig.2 iFi ZEN CAN HFM, balanced spectrum of 1kHz sinewave, DC–1kHz, at 3V into 300 ohms with gain set to 18dB (left channel blue, right red) and to 0dB (left green, right gray) (linear frequency scale).

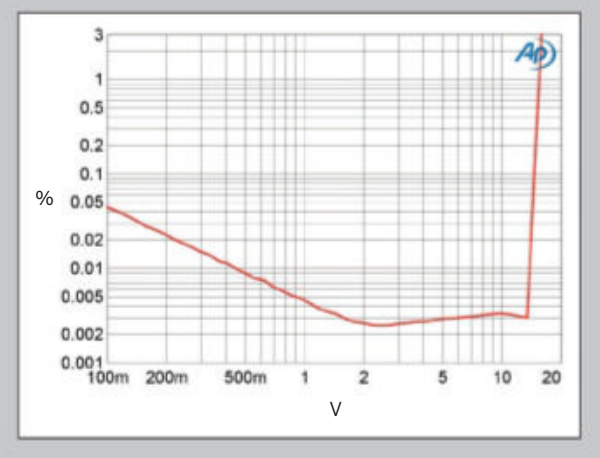

Fig.3 iFi ZEN CAN HFM, 18dB gain, balanced distortion (%) vs 1kHz output voltage into 300 ohms.

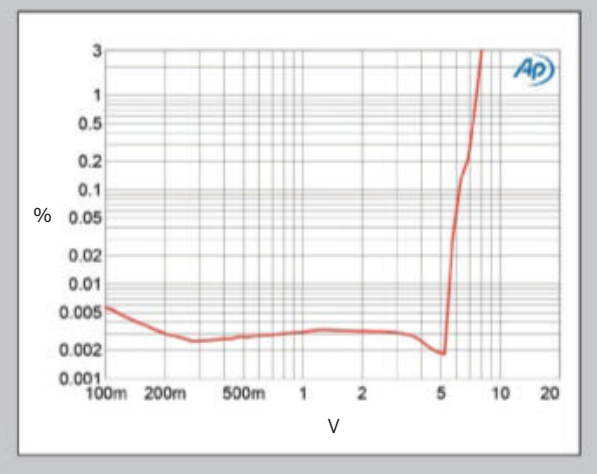

Fig.4 iFi ZEN CAN HFM, 0dB gain, balanced distortion (%) vs 1kHz output voltage into 300 ohms.

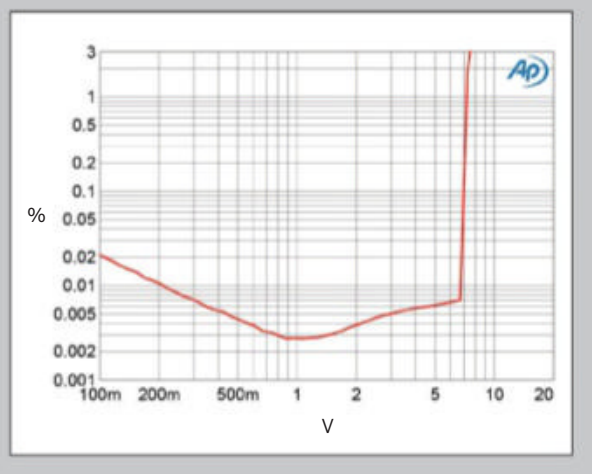

Fig.5 iFi ZEN CAN 6XX, 18dB gain, unbalanced distortion (%) vs 1kHz output voltage into 30 ohms.

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The CAN easily drove all four headphones I tried: HiFiMan HE400S and Drop + (formerly MassDrop) HiFiMan HE4XX, Sennheiser HD 650, and the exquisitely sensitive Sonus Faber Pryma 0|1. I concentrated most of my critical listening on the first three, as they were the best matches for the two ZEN CAN amps.

The product information states that turning on the CAN Signature HFM's EQ "further improves the texture of deep bass and injects more immediacy in the upper midrange." The curve is also said to help smooth uneven treble peaks. What I heard was sharper transient attacks, more air and presence. I also heard more detail and clarity. And yes, the EQ curve obviously boosts the bass.

Listening through the two HiFiMan headphones with both the HFM EQ curve and XSpace turned on, live music was brought

measurements, continued

Figs.3 and 4 respectively plot the percentage of THD+noise in the ZEN CAN's balanced output against the output voltage into 300 ohms with the gain respectively set to 18dB and 0dB. We specify the clipping voltage as being when the THD+N reaches 1%, which is 15V in fig.3 and 7.6V in fig.4. The unbalanced output's clipping voltages were half those of the balanced output's, but even into 30 ohms (fig.5), the ZEN CAN's unbalanced output delivered 7.2V at 1% THD+N. These clipping voltages are much higher than will be necessary with headphones having normal sensitivities, which implies that the THD+N will be very low at typical output levels. I therefore measured how the ZEN CAN's distortion changed with frequency at 2V. The THD+N percentage was extremely low throughout the audioband into 300 ohms (fig.6, blue and red traces) and only rose slightly into 30 ohms (cyan and magenta traces), though there was a very slight increase in the top audio octave.

I looked at the spectrum of the distortion at 3V into 300 ohms (fig.7), because no distortion harmonics were visible above the noisefloor at lower levels. The only harmonic that can be seen is the third harmonic at –117dB (0.00014%), which is below the level of the supply-related spuriae. Tested for intermodulation distortion with an equal mix of 19 and 20kHz tones at the same peak voltage level, the second-order difference product at 1kHz lay below –120dB, and the higher-order products were just below –110dB (0.0003%) (fig.8).

Overall, the ZEN CAN offered superb measured performance.

Turning to the ZEN DAC Signature, I measured both the original version, serial number 5502000155, and the V2 version with which JMu did most of her auditioning, which had the serial number 5320000008. The two versions measured identically in all but one respect, which was the maximum output level in variable gain mode. The V2's maximum output in this mode was 2.07V balanced and 1.04V unbalanced, both values 6dB lower than the maximum outputs

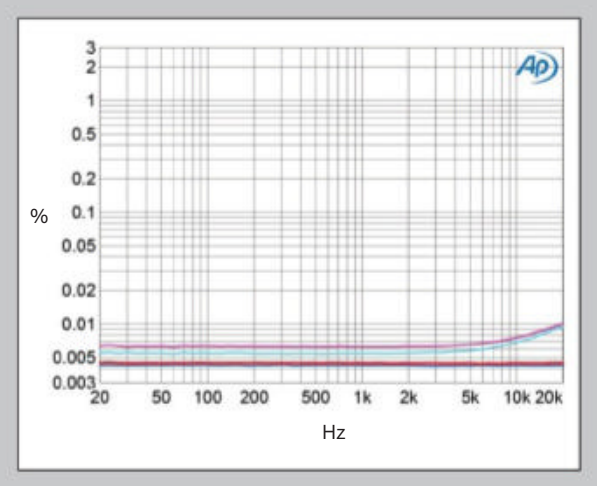

Fig.6 iFi ZEN CAN 6XX, unbalanced distortion (%) vs frequency at 2V into: 300 ohms (left channel blue, right red), 30 ohms (left cyan, right magenta).

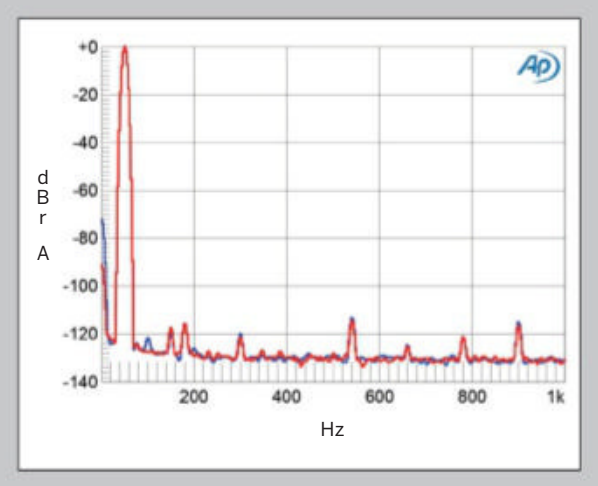

Fig.7 iFi ZEN CAN HFM, 18dB gain, balanced spectrum of 1kHz sinewave, DC–1kHz, at 3V into 300 ohms (left channel blue, right red; linear frequency scale).

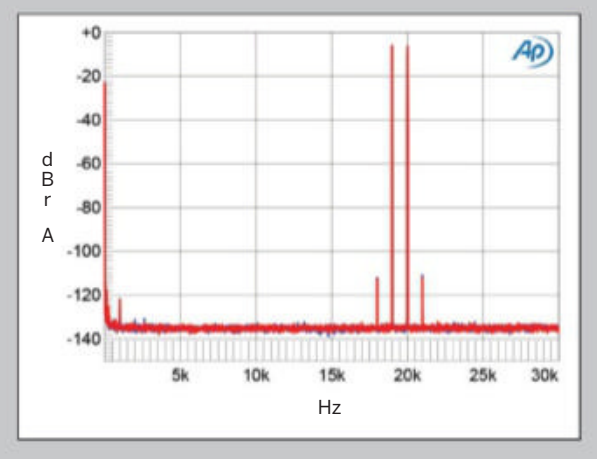

Fig.8 iFi ZEN CAN 6XX, 18dB gain, balanced HF intermodulation spectrum, DC–30kHz, 19+20kHz at 5V into 300 ohms (left channel blue, right red; linear frequency scale).

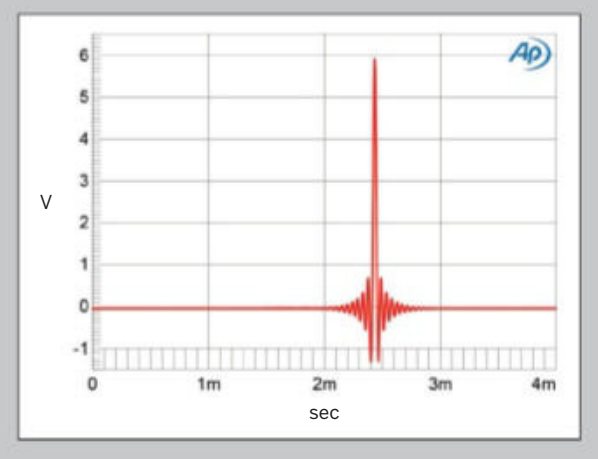

Fig.9 iFi ZEN DAC Signature V2, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

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(back) to life. Kicking off with some post-bop that swings hard, I dug into Lee Morgan, *The Complete Live at the Lighthouse, Hermosa Beach, California* (24/192 FLAC, Blue Note/Qobuz), which was recorded in the summer of 1970, less than two years before Morgan's death at age 33. Morgan's off-the-cuff introduction felt alive and immediate, breath hot on the mike, casual demeanor tangible. A cash register dings near the end of this two-minute segment. I was transported to the venue.

The ZEN duo conveyed those microdynamic details that evoke artists' unique styles and techniques. On "I Remember Britt [Set 2 – Friday…]," during Bennie Maupin's solo about 2:40 in, the flute's notes emerged spacious and light as air. Clear articulation; no shrillness. I could hear the breath behind the music and the variations of embouchure and air pressure. As the sounds of a güiro emerged from the right background about halfway through the track, I could feel the stick scraping across its wooden ridges.

I was craving more live and lively music. Philadelphia natives Low Cut Connie give off a rollicking good-time vibe, led by singer/pianist Adam Weiner's raw, frisky energy and full-on–ham

measurements, continued

in fixed gain mode. While the original ZEN DAC's maximum levels in fixed mode were almost identical to those of the V2, at 4.3V balanced and 2.2V unbalanced, the maximum levels in variable mode were 6.7V and 3.35V, respectively. Distortion was very high at these levels, with crossover artefacts visible on the oscilloscope. The V2's reduction in the maximum output voltage is a desirable change.

Apple's AudioMIDI utility revealed that the iFi's USB input accepted 16-, 24-, and 32-bit integer data sampled at rates up to 768kHz. Apple's USB Prober utility identified both ZEN DAC Signatures as "iFi (by AMR)" from "iFi (by AMR) HD USB Audio," with the serial number strings "00000000" for the original version and "0003" for the V2. The USB port operated in the optimal isochronous asynchronous mode.

Both outputs preserved absolute polarity. The output impedance at the balanced outputs was 199.7 ohms, and at the unbalanced outputs it was 99.6 ohms. Both impedances were consistent across the audioband and very close to the specified values.

The impulse response with 44.1kHz PCM data (fig.9) indicates that the reconstruction filter is a conventional linear-phase type, with time-symmetrical ringing on either side of the single sample at 0dBFS. With 44.1kHz-sampled white noise (fig.10, red and magenta traces), the reconstruction filter's response rolled off above 20kHz, reaching full stop-band suppression at 24kHz. The aliased image at 25kHz of a full-scale 19.1kHz tone (blue and cyan traces) was suppressed by 82dB, and the distortion harmonics of the 19.1kHz tone lay close to –90dB (0.003%). The frequency response was flat in the audioband with a rolloff that started below half of each sample rate (fig.11). Channel matching was superb, and channel separation was 68dB in both directions across the audioband.

The ZEN DAC V2's noisefloor was very low in level (fig.12) and free from any power supply–related spuriae. With dithered

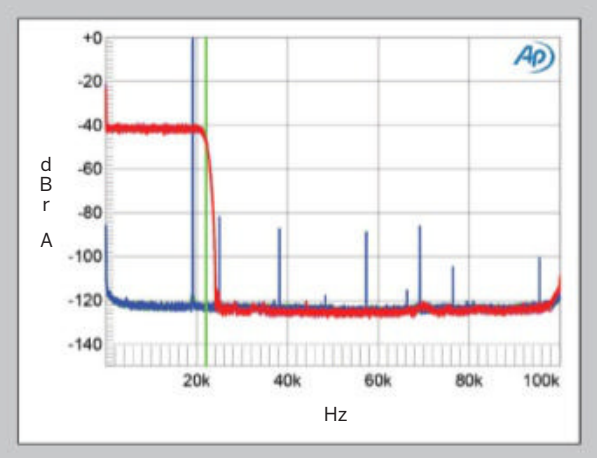

Fig.10 iFi ZEN DAC Signature V2, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with data sampled at 44.1kHz (20dB/vertical div.).

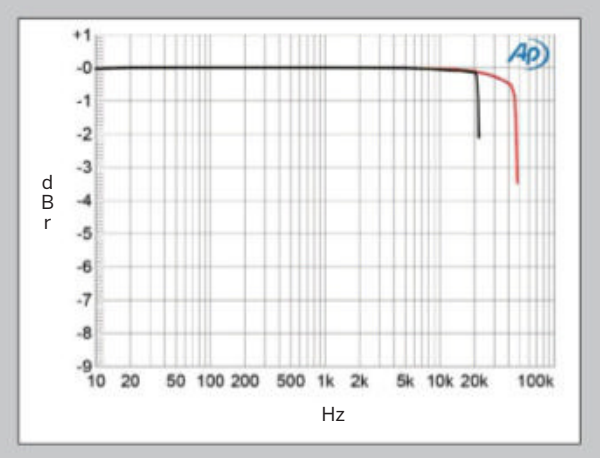

Fig.11 iFi ZEN DAC Signature V2, frequency response at –12dBFS into 100k ohms with data sampled at: 44.1kHz (left channel green, right gray), 96kHz (left blue, right red) (1dB/vertical div.).

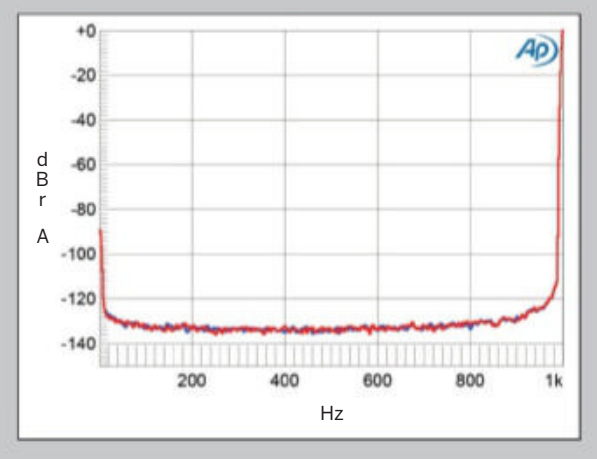

Fig.12 iFi ZEN DAC Signature V2, spectrum with noise and spuriae of dithered, 24-bit, 1kHz tone at 0dBFS (left channel blue, right red) (20dB/vertical div.).

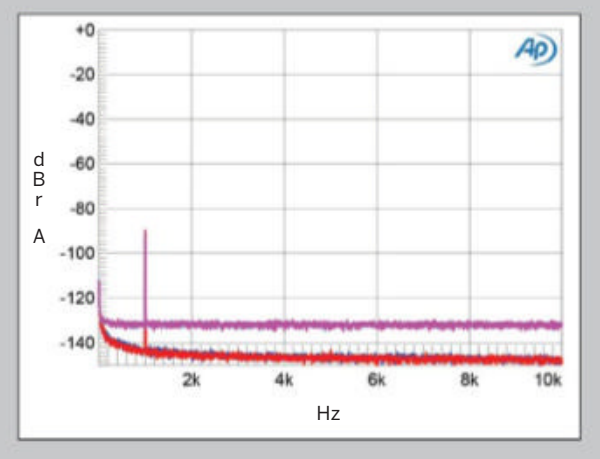

Fig.13 iFi ZEN DAC Signature V2, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).

stage presence. He's especially a hoot to watch live. I put on the band's *Tough Cookies: Best of the Quarantine Broadcasts* (16/44.1 FLAC Contender Records/Tidal). These are stripped-down recordings made during lockdown livecasts. On their spare rendition of Bowie and Eno's "Heroes," piano and tambourine details came through cleanly. The iFi setup conveyed the drama and earnestness of Weiner's delivery on his rendition of "Ain't No Sunshine." Ditto for the snippet of *The Good, the Bad and the Ugly* theme he bangs out on an upright piano.

The differences with or without the HFM (or HD 6XX) EQ and/or XSpace on were subtle, but usually I listened with both on. When I turned off the HFM EQ, some image edges became less clear and showed less separation. The sound was perhaps a little less smooth and a touch drier. Turning off XSpace resulted in less aural breathing space between headphones and my eardrums: As claimed, the space was more inside my head.

Ready for some familiar fare, I cued up the Bill Evans Trio's *Sunday at the Village Vanguard* (16/44.1 FLAC, Riverside/Qobuz), widely considered to be among the best live jazz recordings. On "Solar," Scott LaFaro's solo emerges from Evans's comping at around 3:50—vivid and full of body and texture. With XSpace on, it seemed to come from behind me, left of center amid some quiet audience chatter and Paul Motian's crisp cymbal taps. Turning off XSpace rendered this placement more like what I'm used to hearing with loudspeakers. With XSpace off, the instruments seemed closer, as if my ear were leaning in toward the double bass. XSpace did its job here—it created a more immersive, spacious experience—but in this case I preferred the experience better without it.

I did some passive listening with XSpace on, to Miles Davis's "Human Nature" from his late album *Merci Miles! Live at Vienne* (24/48 MQA, Warner Records/Tidal). That is, I *was* listening passively until the music yanked me out of my concentration on my task—like, whoa, what just happened? The music sounded so far outside the headphones that, for a moment, I wondered where it was coming from.

Electronic music was rendered with punch and clarity. Bass gave the impression of having more extension than it should have, especially through/with the HiFiMan headphones, which (subjectively) are less extended than the Prymas but also more detailed.

Switching musical gears, I put on LCD Soundsystem's *This Is*

measurements, continued

16- and 24-bit 1kHz tones at –90dBFS, the increase in bit depth reduced the level of the noisefloor by 18dB (fig.13), which implies that the processor has 19 bits' worth of resolution. With undithered data representing a tone at exactly –90.31dBFS (not shown), the three DC voltage levels described by the data were well resolved, while with undithered 24-bit data (also not shown), the result was a clean sinewave.

The ZEN DAC V2 featured very low levels of harmonic distortion. With the processor's fixed-level balanced outputs reproducing a 50Hz tone at 0dBFS (fig.14), the only harmonics present were the second at –94dB (0.002%) and the third at –110dB (0.0003%). Commendably, the levels of these harmonics didn't increase when I reduced the load impedance to 600 ohms. Tested for intermodulation distortion with a mix of 19kHz and 20kHz tones, the waveform peaking at 0dBFS, a multiplicity of low-level 1kHz-spaced tones were produced (fig.15). Reducing the signal level to –3dBFS eliminated these spuriae (fig.16), revealing actual intermodulation to be very low in level—below the levels of the aliased images of the tones at 24.1kHz and 25.1kHz, in fact.

Testing for jitter rejection with Miller-Dunn J-Test data is not diagnostic for USB data, as the bit clock is not embedded in the data. However, it will still reveal problems like supply noise on the DAC chip's voltage reference pin. With 16-bit, 44.1kHz J-Test data, all the odd-order harmonics of the signal's LSB-level, low-frequency squarewave were very close to the correct levels (fig.17, sloping green line), and no supply-related sidebands can be seen. The central spike in this graph, which represents the high-level tone at exactly one-quarter the sample rate, has some slight broadening at its base, but this will not have any subjective consequences.

Both versions of the iFi ZEN DAC Signature featured excellent measured performance, but the V2 offers a worthwhile improvement over the original version, due to the reduction in the variable mode's maximum output level. **—John Atkinson**

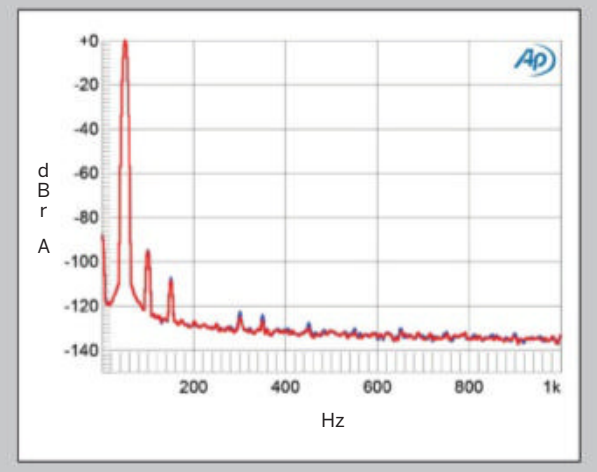

Fig.14 iFi ZEN DAC Signature V2, spectrum of 50Hz sinewave, DC–1kHz, at 0dBFS into 100k ohms (left channel blue, right red; linear frequency scale).

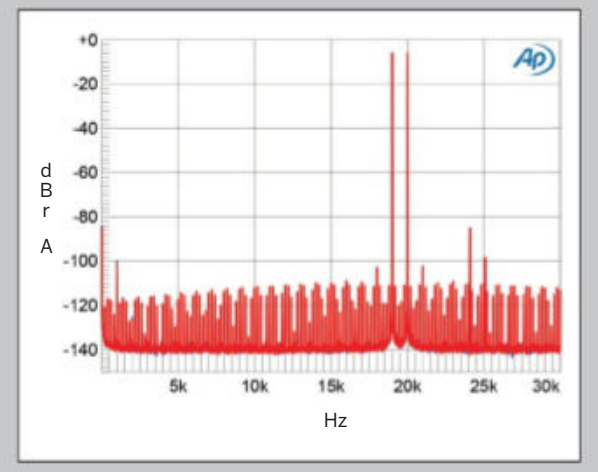

Fig.15 iFi ZEN DAC Signature V2, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 0dBFS peak into 100k ohms (left channel blue, right red; linear frequency scale).

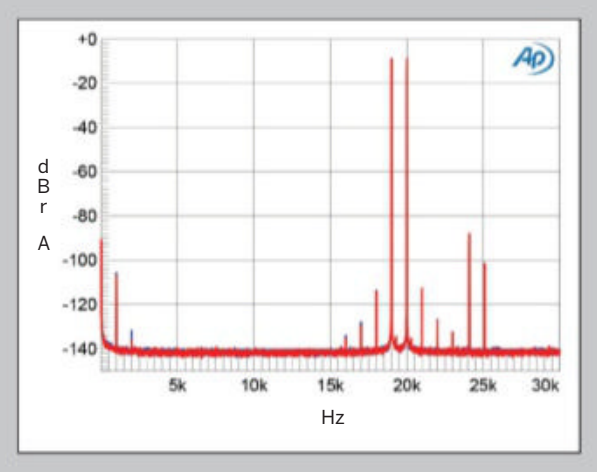

Fig.16 iFi ZEN DAC Signature V2, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 0dBFS peak into 100k ohms (left channel blue, right red; linear frequency scale).

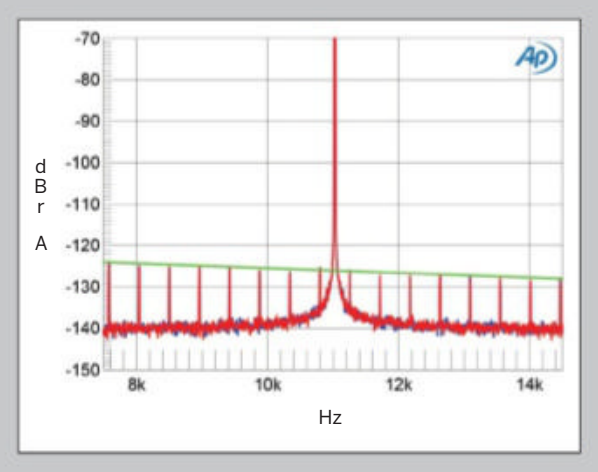

Fig.17 iFi ZEN DAC Signature V2, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit TosLink data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

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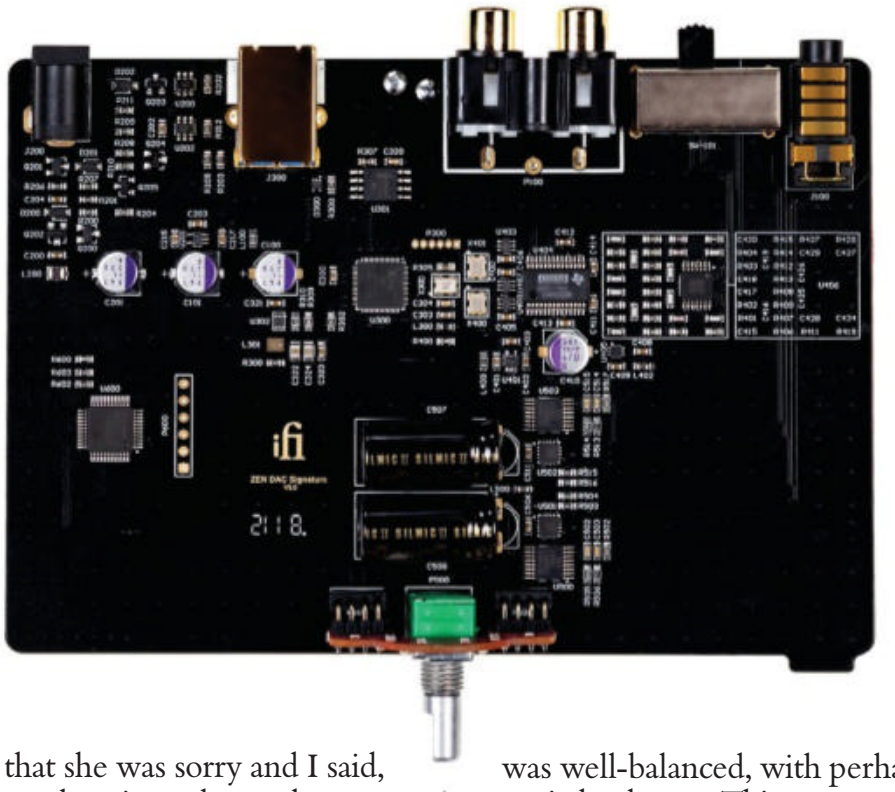
Happening (Deluxe Edition) (16/44.1 MQA EMI/Tidal). Filled with soft-to-loud dynamic contrasts, this album should be a wild ride. The ZEN's quiet backgrounds (with both the HE4XX and HE400S) allowed these dynamic shifts to emerge on tracks like "Dance Yrself Clean," especially its long, steady-build intro and the final wind-down. Attacks on bongos, congas, and cowbell were sharp and clean. "Pow Pow" was presented with plenty of, well, pow pow, and a satisfying low end. The bassline hit extra deep and funky, a bit thicker through the Prymas, which isn't a bad thing with this music. (Even with the iEMatch inline, I had to toggle the gain button back to the 0dB setting for those more sensitive 'phones.)

Tonal balance with the ZEN set seemed extended and neutral, with rare hints of brightness. It's hard to sit still listening to the Delvon Lamarr Organ Trio's *Live at KEXP!* (16/44.1 FLAC, Colemine Records/Tidal). Their instrumental rendition of Curtis Mayfield's "Move on Up" came through the ZEN Signature Set (HFM) with great pace and energy. If you aren't tapping your toes or nodding your head in time to tracks like this, check your pulse. Lamarr's Hammond B3 possesses voicelike qualities and, through the ZEN set, plenty of air. Turning on HFM EQ improved organ tone, but the guitar edged toward brightness on "Memphis," especially through the Prymas. On the other hand, the ZEN duo served the hard-hitting percussion on that track well.



The Beastie Boys' sample-laden classic *Paul's Boutique*, which I normally listen to on vinyl, translated well to headphones (16/44.1 FLAC, Capitol Records/Tidal) with the higher-impedance Sennheisers and their matching amplifier. On "Shadrach," the samples integrated better, sounding more like actual music than samples patchworked in.

There are priceless lyrical rhymes in this music, like, "I'm long distance from my girl and I'm talking on the cellular/She said that she was sorry and I said, 'Yeah, the hell you were.'" Listening to the trio trade vocals on tracks like "High Plains Drifter," it was easy to visualize them popping in and out of mike range, in and out of the frame. This sense of live action captured made these tracks even more fun than they already are.

Changing vocal styles completely, Over the Rhine singer Karen Bergquist's nuances can be subtle—as on "Trouble" from *The Trumpet Child* (16/44.1 FLAC, Great Speckled Dog/Qobuz). Here, her expression lies somewhere between vampy and campy, sultry and playful. Not all systems can convey this. Through the HE4XX with the iEMatch, volume set at 11:00 or 12:00, gain set to 12dB, her voice sounded natural, as she sounded when I've heard her live. Instruments sounded as they should, too: Linford Detweiler's sparkling piano; strings; what I think is bass clarinet in the left channel along with gently thumping low brass—all rendered in full.

On the Breeders' *Pod* (16/44.1 FLAC, 4AD/Tidal), Steve Albini's production struts, stomps, and swings. Percussion attacks rocked my world, snapped me out of autopilot. Kickdrum sounded full and expansive on the "When I Was a Painter" intro and on intermittent breaks. Perhaps the HFM EQ curve's upper/midrange bumps bolstered those leading-edge transients. It's a kick to hear things you hadn't noticed before on familiar tracks. I detected more raspiness in Kim Deal's voice, screeching to near-straining at times.

ASSOCIATED EQUIPMENT

Digital source MacBook Air (M1, 2020) as Roon Core. AudioQuest DragonFly Cobalt.
Integrated amplifier MBL N51.
Loudspeakers MBL 120.
Headphones HiFiMan HE400S and Drop x HE4XX; Sennheiser HD 650; Sonus Faber Pryma 0|1.

Comparisons

I was curious how the AudioQuest DragonFly Cobalt USB headphone DAC would compare to the ZEN DAC/CAN separates. Both delivered detail and a sense of the recording space. A listen to the Andrew Bird/Fiona Apple folksy duet "Left Handed Kisses" (24/96 FLAC Concord Loma Vista/Qobuz) through the ZEN DAC and CAN amp (and the 4XX and HD 650 'phones) sounded full, up-close, and substantial. Apple's warm vibrato stood out. The chimes struck cleanly, sustained clearly, and decayed slowly. With HFM EQ on, these seemed a bit more amped up, with detail slightly heightened.

I swapped in the DragonFly Cobalt, matching volume. With slightly less separation between elements, the same track sounded more blended, more of a piece. Attacks might have been a hair less razor-sharp, but nothing stuck out or seemed out of place or exaggerated. Apple's and Bird's voices were distinct and pleasing. The presentation was well-balanced, with perhaps fewer peaks and valleys in the sonic landscape. Things seemed less fortified. Less dynamic perhaps, but it seemed more natural in some aspects.

Finally, for fun, I tried the ZEN DAC Signature V2 in my main system, using a Pentaconn-to-XLR adapter I'd ordered online to connect the ZEN DAC's output, balanced to the MBL N51 integrated amplifier's XLR inputs. I matched SPL as best I could, bypassing the N51's volume control and using the ZEN DAC's. The sound into the MBL 120 Radialstrahler speakers exceeded my expectations. Detail was maintained and the sound was robust, full, and clear. Backgrounds remained quiet.

Conclusion

I was surprised that these ZEN Signature sets, used as directed, produced too much volume with the recommended headphones. Once that was fixed, with the iFi iEMatch attenuator, the ZEN Signature sets delivered highly resolved, clean, pristine, dynamic sound. The amplifiers are powerful. Backgrounds black as a new-moon nighttime sky brought musical details to the foreground. These two components sounded more expensive than they are and offer impressive sound quality—and a bit of style—for not a lot of money. ■

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FOLLOW-UP

BY HERB REICHERT & JOHN ATKINSON

THIS ISSUE: Herb Reichert listens to the Mk2 version of the Sutherland Engineering Little Loco; John Atkinson measures the Mola Mola Tambaqui D/A processor and finishes measuring the Technics SU-R1000 integrated amplifier.

SUTHERLAND ENGINEERING LITTLE LOCO MK2 PHONO STAGE

Sutherland Engineering's Ron Sutherland has been building highly respected conventional RC-type phono stages since the first settlements at Jericho. But in 2018, on the urging of a friend, he developed a current-drive/transimpedance phono stage and thought it was *crazy*-good, so he called it the Phono Loco. As I recall, the Phono Loco arrived to a fanfare of praise and curiosity, but it cost a lot ($8200), and a lot of audiophiles were skeptical about its unusual (but not unprecedented) current-mode operation and its need for balanced tonearm leads. This latter condition was a deal-breaker for many (including me) who struggled to comprehend the benefits of current-drive and were already invested in and satisfied with voltage-amplifying phono stages and step-up transformers.

According to the Sutherland Engineering website, the Phono Loco, the less expensive Little Loco ($3800), and the least expensive TZ Vibe ($1400) are best suited for use with low-output, low-internal-impedance moving coil cartridges; high-impedance moving magnet cartridges are not recommended.

Brian Damkroger reviewed the first version of Sutherland's Little Loco in the October 2019 issue of *Stereophile*.[1] Like the Phono Loco, the Little Loco required fully balanced wiring from the phono cartridge to the Loco's balanced-only XLR inputs. Happily for me, and maybe lucky for you, the new "Mk2" version[2] has *only* single-ended inputs; it still works only with MC cartridges—the lower the output, the better—but now with no special wiring requirements. This flexibility should clear the path for more audiophiles to explore this alternative preamplification strategy.

Before I asked Mr. Sutherland for a Mk2 review sample, one of my cartridge-whisperer friends had already purchased a Little Loco and was raving about its "relaxed, nonelectronic" sound. He said it was "putting up a strong fight" against his John Curl–designed Vendetta Research SCP-2A, which he has been using continuously since 1990. That's high praise.

When I removed the Little Loco's top plate, the artist and amp-builder in me was impressed with the well-turned-out chassis and master-level circuit board design. Everyone knows how I feel about small power transformers and cheap, wave-soldered green-boards floating in mostly vacant bling-boxes; the Little Loco comes in a sturdy black steel box with an austere, brushed-aluminum faceplate with nothing on the front but a modest logo and a tiny Power On light. Inside, the orange and puce circuit boards are thick and properly hand-soldered.

Ron Sutherland describes the first stage of the Little Loco as a "transimpedance amplifier." A transimpedance amplifier is a current-to-voltage converter whose "gain" is directly proportional to the value (in ohms) of the feedback resistor connecting the output to the inverting input of an op-amp with its noninverting input shorted to ground. The output voltage of this transimpedance amplifier is equal to its input current multiplied by the designer-selected value (in ohms) of its feedback resistor.[3] Ignoring a cartridge's—er—*potential* for voltage output while maximizing its current output (into a load resistance that is smaller than its own internal impedance) appears to solve the cartridge-loading issue.

The question for today is, how does the sound character of a transimpedance phono stage compare to that of a traditional voltage-gain phono stage and to that of a step-up transformer?

In the 1970s, my "I'm-cooler-than-my-friends" attitude led to my desire to own only British pressings of British-invasion music. After a score of years, that desire led to a need to hear British music on British labels played through British-made hi-fi. This weird, Veblen-esque desire led me down some un-Herb-like musical paths including this old-school audiophile chestnut from the Lyrita catalog: a trio of Walter Leigh compositions played by the London Philharmonic conducted by Trevor Pinnock (Lyrita LP SRCS 126). I've been playing this disc for decades, but I never play it for its musical content, which is forthright and benign to a fault (like the painting reproduced on its green-tinted cover); I use it to determine if my phono cartridge is "navigating the grooves" properly. If I can enjoy listening to both sides in one session, it means the stylus-rock is sitting just right in the LP's slot.

The day I installed Sutherland Engi-

1 See stereophile.com/content/sutherland-engineering-little-loco-phono-preamplifier.

2 Sutherland Engineering, 455 East 79th Terrace, Kansas City, MO 64131. Tel: (816) 718-7898. Web: sutherlandengineering.com.

3 See allaboutcircuits.com/video-tutorials/op-amp-applications-current-to-voltage-converter.

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neering's Little Loco Mk2, I played that Leigh-Lyrita recording twice. Both sides. The sounds from this famous disc flowed from my DeVore Fidelity Orangutan O/93 speakers with creamy ease, delicacy of detail, and no spatial congestion. Sutherland's Loco presented the Leigh-Lyrita's delicate air and dramatic spatial layering as dominant features. I could "see" the sturdy, morphing forms of its spatial constructions as I washed dishes in the next room. Also obvious from the next room was the solidity and focus of the Loco's bass octaves. The Koetsu Rosewood Signature Platinum–Loco combo reproduced bass and space with more "obviousness" than my reference, John Curl–designed Parasound Halo JC 3+ phono stage.

Realizing that the Little Loco Mk2 had something special going on, I tried a record I *only* play for the excitements of its musical content: *Cheap Thrills* by Big Brother & the Holding Company (Columbia LP KCS 9700). In contrast to those audiophile-approved Walter Leigh creations, this record is "Approved by Hell's Angels – Frisco"; it says so right on its R. Crumb–painted cover. You know you got it/If it makes you feel good.

With the Koetsu's 5 ohm impedance driving the Little Loco, this supericonic album sounded more like Janis circa 1968 and less like a slightly annoying, heavily doctored Columbia studio album, which is what it usually sounds like. The added crowd noise was obvious but less annoying than usual. With the Loco, the only genuinely *live* part—Janis singing "Ball and Chain" at the Winterland ballroom—made it through my system with all its strutting wow and mind-altering *Thrills* intact.

While they cost about the same, Sutherland Engineering's Little Loco and Parasound's $3000 JC 3+ phono preamp are not in direct competition. The JC 3+ is a fully adjustable phono preamplifier that works equally well with any moving coil, moving magnet, or moving iron phono cartridge.[4] The Little Loco's transimpedance input makes it more of a specialist product. Its *raison d'être* is to make *some (perhaps many)* moving coil cartridges sound more appealing than they would or could with a conventional voltage-amplifying stage like the Parasound.

During my leisurely back-and-forth comparisons, I noticed that the Little Loco preserved greater and denser amounts of low-level atmospheric information. Images were thicker and more three-dimensional. With the Loco, the back areas of the projected soundspace were filled with more "stuff" to examine. But that's just audiophile fluff-talk. What made the

Loco "crazy good" was how it wrangled every ounce of dynamic mojo out of every recording. The Little Loco's easy-flowing dance'n'sing talents made the JC 3+ sound staid and ministerial.

Naturally, current-mode phono stages partner well with low-resistance cartridge coils because they generate less voltage but also resist current less. I enjoy low-impedance moving coils because the reduced mass of their fewer-turns coils recovers more small-signal spatial and atmospheric information than their heavier, more-coil-turns counterparts. (Those counterparts, though, trade some nuance and air for greater drama and dynamics.)

A perfect example of a low-impedance, low–moving mass cartridge is the $6995 My Sonic Lab Ultra Eminent Ex, which I described in Gramophone Dreams #25.[5] The Ultra Ex is my behind-the-scenes music-listening favorite because in my system, it recovers more of what I imagine is in the grooves than the Koetsu does. I've said this repeatedly: My Sonic Lab's Ultra Eminent Ex reaches so far into all-analog black discs that I can hear the magnetic tape passing over the recorder's heads.

According to the Ultra Eminent Ex's designer, Y. Matsudaira, My Sonic Lab's signature SH-μX magnetic core material allows him to make cartridges with minimal coil-turns while still generating a reasonable, 0.3mV output. As a side effect, the Ultra Ex's low-turns coils permit an unusually low 0.6 ohms internal impedance, which should make it a perfect match for the Little Loco.

When I reviewed the Ex, I used the My Sonic Lab's Y. Matsudaira–designed Stage 1030 step-up transformer. Since then, I've used the Ex with a variety of high-quality SUTs and several transistor phono stages loaded at every setting between 14 ohms (with the HoloAudio LCR-1) to 400 ohms (with the Parasound JC 3+); none of these options sounded as right and satisfying as the Stage 1030.

But now, with the Ultra Eminent Ex driving Sutherland Engineering's Little Loco, I never want to change cartridges or phono preamplification again. These two phono products seem made for each other. The Little Loco makes the Ex's quiet spaces quieter, its deep spaces deeper and easier to see into. Transimpedance loading seems to enhance the palpability of the Ultra Eminent Ex's output. When playing orchestral music, the Ex–Loco combo emphasizes the physical character of instruments, the materiality of wood and metal. Rich inner details, like the tautness of drum-head skins or the decay of cymbals, are not submerged in the larger mass of orchestra and hall sounds.

Where does this remarkable current-sucking device fit into the larger schemes of audiophile-quality phonography? If you are committed to high-output moving magnet/moving iron cartridges, it doesn't fit in at all. However, if you are a well-seasoned audiophile that's getting bored with that expensive low-impedance moving coil you once thought was purity and excitement personified, you might reconsider how to amplify its output. At their best, active tube or JFET head amps add an aura of Tesla-lab electric-shock excitement to the output of moving coils. Many are

4 Although some certain moving iron cartridges work best loaded at about 10k ohm, a rare setting not found on the JC 3+.

5 See stereophile.com/content/gramophone-dreams-25-dr-feickert-jelco-koetsu-my-sonic-lab-page-2.

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the times I've switched from a JFET head amp to an expensive step-up transformer and been disappointed by the loss of those arm-hair–raising excitements.

But more frequent are the times when I've switched from passive SUT gain to active head-amp gain and been disturbed by the loss of the SUT's radiant, understated, low-fatigue naturalness. But now my months-long auditions of Sutherland Engineering's Little Loco transimpedance phono amplifier indicate that it might give jaded phonophiles the best of JFETs *and* SUTs. Without the disappointments. Highly recommended.**–Herb Reichert**

MOLA MOLA TAMBAQUI D/A PROCESSOR

When Herb Reichert reviewed the Mola Mola Tambaqui in his December 2021 Gramophone Dreams column, he very much liked what he heard from this Bruno Putzeys–designed D/A processor.[6] "During my first days of listening, the Mola Mola's most conspicuous sonic trait was a bright, evenly illumined clarity," he wrote, adding, "Mola Mola's Tambaqui did not whisper—it declared loudly: 'See! The truth is more beautiful than you thought it would be!'" Herb concluded that with the Mola Mola Tambaqui, "Putzeys seems to be punching away at the fundamentals of digital conversion."

After he had written his column, Herb emailed me to suggest that I measure the Tambaqui. I didn't need to be asked more than once.

I controlled the Tambaqui with the MOLAREMOTE app for iOS, which I found straightforward to use, and I used my Audio Precision SYS2722 analyzer[7] to examine the Mola Mola Tambaqui's performance using its TosLink, AES3, and USB inputs. I then repeated some of the tests with the magazine's higher-resolution Audio Precision APx500 analyzer.

The Tambaqui's AES3 and optical and coaxial S/PDIF inputs locked to data sampled up to 192kHz. Apple's Audio-MIDI utility revealed that the USB inputs accepted 24-bit integer data sampled at rates up to 768kHz. Apple's USB Prober utility identified the Mola Mola as "Mola-Mola USB Audio 2.0" from "MolaMola," and the USB port operated in the optimal isochronous asynchronous mode.

The Tambaqui got warm in use, the top panel's temperature stabilizing at 103.8°F (39.9°C). The outputs all preserved absolute polarity, and the output level depended on the gain setting, described in the app as "6V," "2V," or "600mV." A 1kHz digital signal at 0dBFS resulted in levels of 6.11V, 1.93V, or 611mV at the main balanced output, 6.04V, 1.91V, or 604mV at the headphone outputs. The output impedance was 44 ohms at the main balanced outputs and a low 0.47 ohm at the headphone outputs, both values as specified and consistent across the audioband.

The impulse response with 44.1kHz data (fig.1) indicates that the single reconstruction filter is a conventional linear-phase type, with time-symmetrical ringing on either side of the single sample at 0dBFS. With 44.1kHz-sampled white noise (fig.2, red and magenta traces), the reconstruction filter's response rolled off above 20kHz, reaching full stop-band suppression at 26kHz, a little above half the sample rate (vertical green line). The aliased image at 25kHz of a 19.1kHz tone at 0dBFS (blue and cyan traces) was suppressed by 38dB, and the highest-level distortion harmonic of the 19.1kHz tone,

6 The Tambaqui costs $13,400. Mola Mola, Kattegat 8, 9723JP Groningen, Netherlands. Tel: +31(0)505264993. Web: Mola-Mola.nl. US distributor: GTT, 356 Naughright Rd., Long Valley, NJ 07853. Tel: (908) 850-3092. Web: gttaudio.com.

7 See stereophile.com/content/measurements-maps-precision.

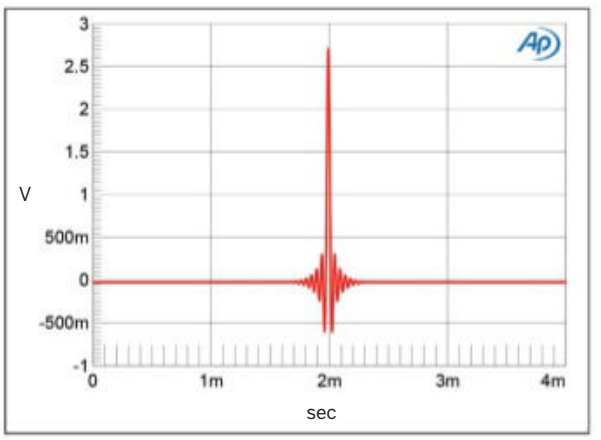

Fig.1 Mola Mola Tambaqui, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

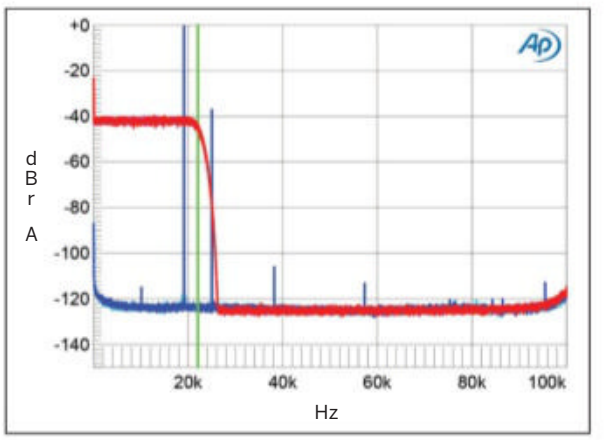

Fig.2 Mola Mola Tambaqui, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with data sampled at 44.1kHz (20dB/vertical div.).

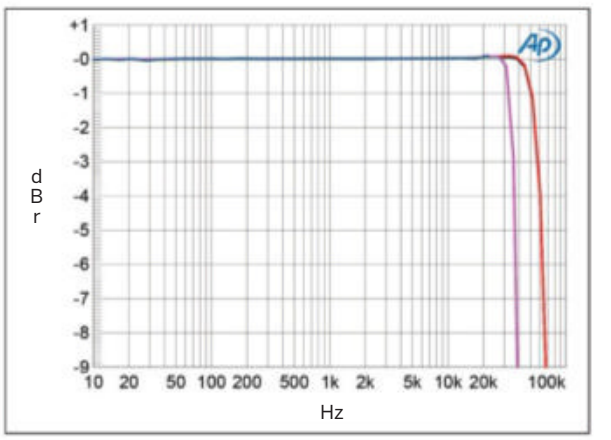

Fig.3 Mola Mola Tambaqui, frequency response at –12dBFS into 100k ohms with data sampled at: 44.1kHz (left channel blue, right gray), 96kHz (left cyan, right magenta), 192kHz (left green, right red) (1dB/vertical div.).

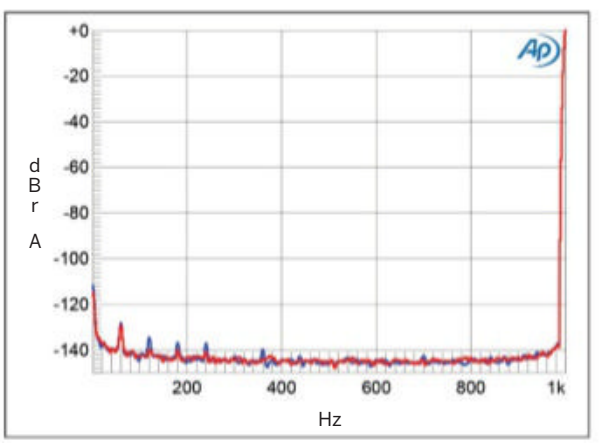

Fig.4 Mola Mola Tambaqui, 2V fixed output, spectrum with noise and spuriae of dithered 1kHz tone at 0dBFS with 24-bit data (left channel blue, right red) (20dB/vertical div.).

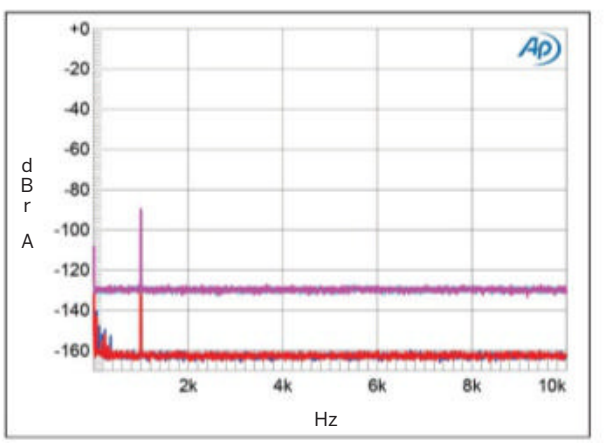

Fig.5 Mola Mola Tambaqui, 6V fixed output, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).

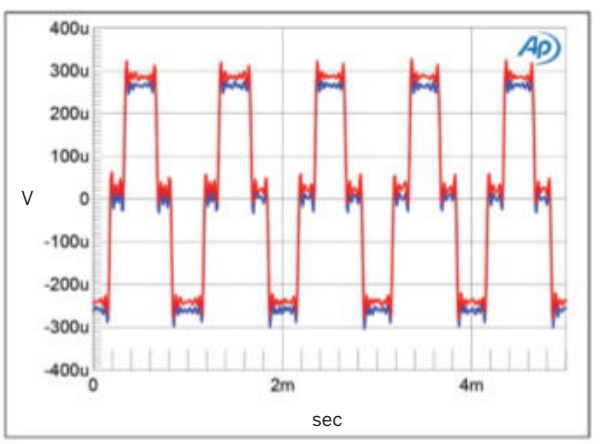

Fig.6 Mola Mola Tambaqui, waveform of undithered 1kHz sinewave at –90.31dBFS, 16-bit data (left channel blue, right red).

the second, lay at –107dB (0.0004%). The frequency response was flat in the audioband, with then a rolloff that started below half of each sample rate (fig.3). Channel matching was superb.

Channel separation was 112dB in both directions across the audioband, and the Tambaqui's noisefloor was very low in level (fig.4). This spectrum was taken with the processor's maximum output set to 2V—HR had used the Tambaqui set to 2V maximum output level—and any supply-related spuriae were at –130dB or lower.

To examine the Mola Mola's ultimate resolution, I set the maximum output level to 6V and examined the output spectrum with a dithered 1kHz tone at –90dBFS with 16- and 24-bit data (fig.5). With 24-bit data, the noisefloor dropped by 33dB, which implies that the Tambaqui offers almost 22 bits of resolution, the highest I have encountered. Repeating the measurement with the maximum output set to 2V, the increase in bit depth dropped the noisefloor by 24dB (not shown), which is still 20 bits' worth of resolution. With undithered data representing a tone at exactly –90.31dBFS (fig.6), the three DC voltage levels described by the data were well resolved, the ringing of the reconstruction filter could clearly be seen, and DC offset

was negligible. With undithered 24-bit data (fig.7), the result was a clean sinewave despite the very low signal level.

As implied by the spectrum in fig.2, the Tambaqui featured very low levels of harmonic distortion. I therefore looked at the spectrum of the balanced output with the APx500 analyzer while the processor reproduced a 1kHz tone at 0dBFS (fig.8).

Even with the Tambaqui's maximum output level set to 6V, the only harmonic visible was the third, at a roots-of-the-universe level of –130dB (0.00003%). Intermodulation distortion was also extremely low, even into 600 ohms (fig.9), though moderate-level aliased images of the two high-frequency tones can be seen at 24.1kHz and 25.1kHz.

Tested for rejection of word-clock jitter via its TosLink input, using 16-bit J-Test data sampled at 44.1kHz, the Tambaqui's output was clean. All the odd-order harmonics of the J-Test signal's LSB-level, low-frequency squarewave were very close to the correct levels (fig.10, sloping green line). No supply-related sidebands can be seen, and the random noisefloor is very low in level. However, some very low-level sidebands of unknown origin are visible in the left channel (blue trace). Repeating the test with 24-bit data gave a superb result (not shown). The left channel's sidebands are still present; at –140dB, however, these are inconsequential.

The Mola Mola Tambaqui offers state-of-the-digital-art measured performance. I am not surprised HR liked its sound.

–John Atkinson

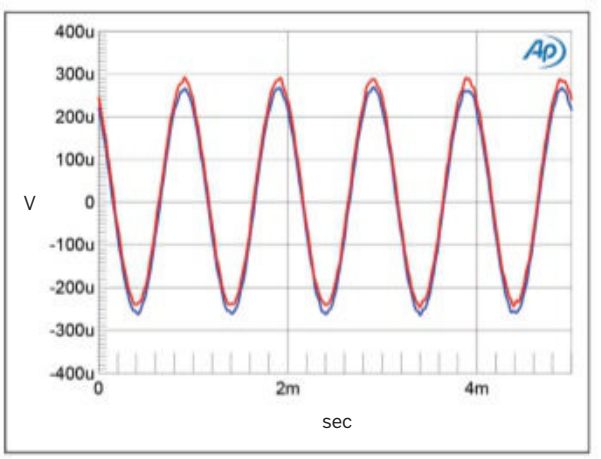

Fig.7 Mola Mola Tambaqui, waveform of undithered 1kHz sinewave at –90.31dBFS, 24-bit data (left channel blue, right red).

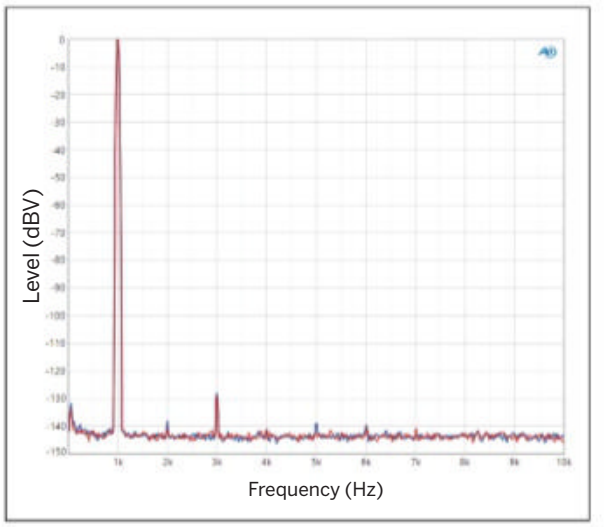

Fig.8 Mola Mola Tambaqui, 6V fixed output, spectrum of 1kHz sinewave, DC–10kHz, at 0dBFS into 200k ohms (left channel blue, right red; linear frequency scale).

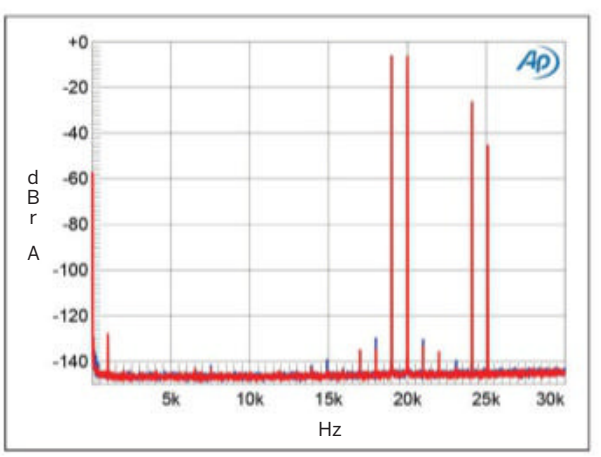

Fig.9 Mola Mola Tambaqui, 2V fixed output, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 0dBFS peak (left channel blue, right red; linear frequency scale).

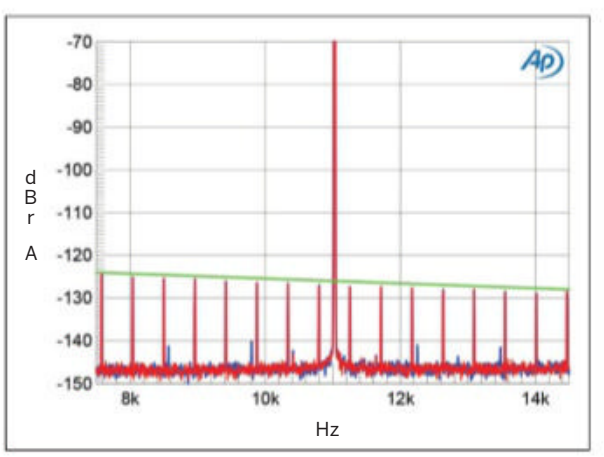

Fig.10 Mola Mola Tambaqui, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit TosLink data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

TECHNICS SU-R1000 INTEGRATED AMPLIFIER

As explained in the Measurements sidebar to Ken Micallef's review in the December 2021 issue, I measured a different sample, serial number GJ1DA001010, from the

one that Ken Micallef auditioned. And as mentioned in that review, the measurements of the SU-R1000's digital and phono inputs had to be held over to this issue due to lack of space in that already jampacked issue.

Using my Audio Precision SYS2722 analyzer,[8] I looked at the Technics SU-R1000's digital-input performance using its TosLink input, then repeated some of the tests with the USB input. To avoid damaging the power amplifier stage with high-level digital data, I primarily examined the digital inputs' behavior at the headphone output, which mutes the loudspeaker output. The SU-R1000's optical and coaxial S/PDIF inputs locked to data sampled up to 192kHz. Apple's Audio-MIDI utility revealed that the USB inputs accepted 16-, 24-, and 32-bit integer data sampled at rates up to 768kHz. Apple's USB Prober utility identified the Technics as "Technics USB Audio" from "Panasonic Corporation" and confirmed that the USB port operated in the optimal isochronous asynchronous mode.

The Technics SU-R1000's digital inputs all preserved absolute polarity. With the volume control set to its maximum, a 1kHz digital signal at –30dBFS resulted in a level at the preamplifier output of 441.4mV, at the headphone output of 2.918V, and at the loudspeaker outputs of 13.44V. The latter voltage is 9.2dB below the amplifier's measured clipping voltage into 8 ohms. It appears, therefore, that the digital inputs have around 21dB of excess gain. Fortunately, the SU-R1000 has a 20dB input attenuator setting that can be activated for both analog and digital inputs.

The impulse response with 44.1kHz data and MQA decoding turned off (fig.1) indicates that the reconstruction filter is a conventional linear-phase type, with time-symmetrical ringing on either side of the single sample at 0dBFS. Turning on MQA resulted in a short, minimum-phase impulse response (fig.2); this is the filter applied by the MQA decoder to non-MQA data. With 44.1kHz-sampled white noise (fig.3, red and magenta traces), the linear-phase filter's response rolled off sharply above 20kHz, reaching full stop-band suppression at 24kHz, just above half the sample rate (vertical green line).[9] The aliased image at 25kHz of a 19.1kHz tone at 0dBFS (blue and cyan traces) is completely suppressed, and the highest-level distortion harmonic of the 19.1kHz tone lay at –70dB (0.03%). With the MQA decoder active, white noise rolled off slowly above the audioband, and a large number of aliased images of a 19.1kHz tone were visible both in and above the audioband. Reducing the level of the 19.1kHz tone by 3dB eliminated most of these images (fig.4).

The digital-input frequency response with the MQA decoder active was flat in the audioband then rolled off relatively gently above half of each sample rate (fig.5). The levels of the two channels were perfectly matched.

To examine the ultimate resolution of the SU-R1000's digital inputs, I disabled the 20dB attenuation, set the volume control to its maximum, and examined the spectrum at the headphone output with a dithered 1kHz tone at –90dBFS with 16- and 24-bit data (fig.6).

With 24-bit data, the noisefloor dropped by 30dB at low and middle frequencies, which implies that the SU-R1000 offers close to 21.5 bits of resolution. However, the headphone output will be well into clipping at levels typical of

8 See stereophile.com/content/measurements-maps-precision.

9 My continued thanks to MBL's Jürgen Reis for suggesting this test to me.

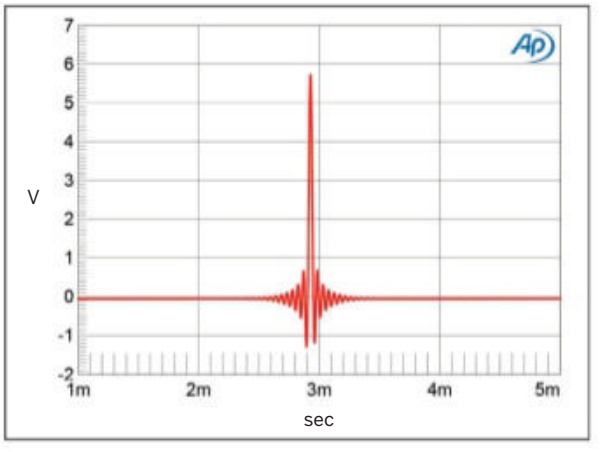

Fig.1 Technics SU-R1000, digital inputs, MQA decoding switched off, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

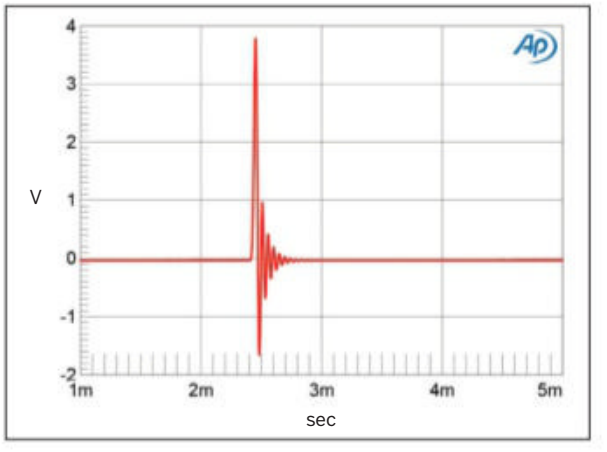

Fig.2 Technics SU-R1000, digital inputs, MQA decoding switched on, impulse response (one sample at 0dBFS, 44.1kHz sampling, 4ms time window).

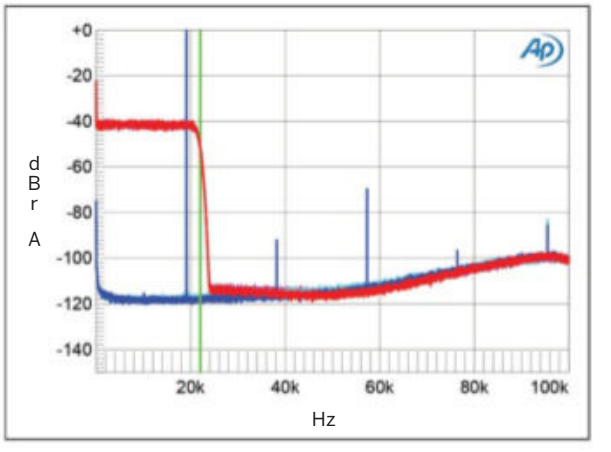

Fig.3 Technics SU-R1000, digital inputs, MQA decoding switched off, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at 0dBFS (left blue, right cyan), with data sampled at 44.1kHz (20dB/vertical div.).

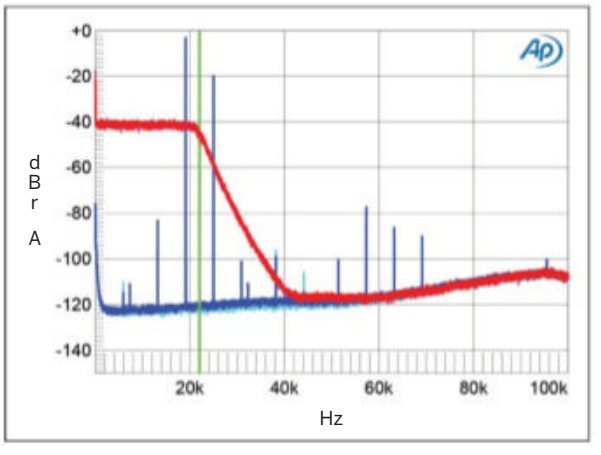

Fig.4 Technics SU-R1000, digital inputs, MQA decoding switched on, wideband spectrum of white noise at –4dBFS (left channel red, right magenta) and 19.1kHz tone at –3dBFS (left blue, right cyan), with data sampled at 44.1kHz (20dB/vertical div.).

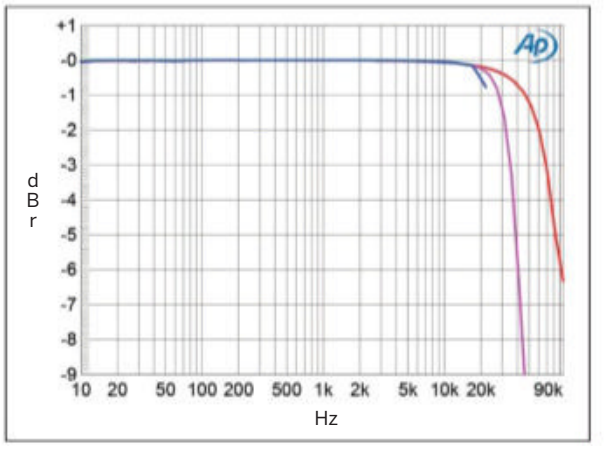

Fig.5 Technics SU-R1000, digital inputs, MQA decoding switched on, frequency response at –12dBFS into 100k ohms with data sampled at: 44.1kHz (left channel green, right gray), 96kHz (left channel cyan, right magenta), 192kHz (left blue, right red) (1dB/vertical div.).

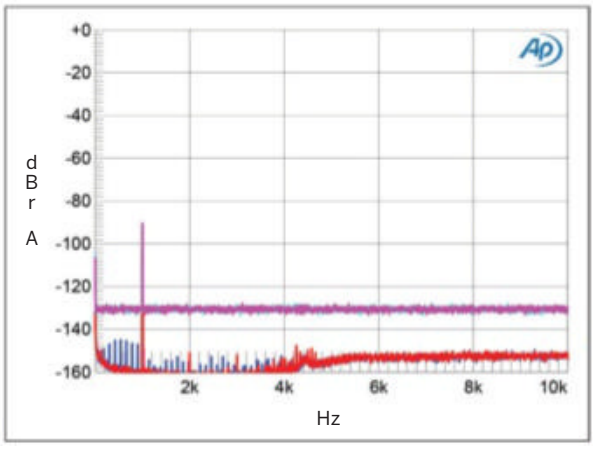

Fig.6 Technics SU-R1000, digital inputs, no input attenuation and volume control set to maximum, spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).

music recordings, so I reran this test with the 20dB attenuator in-circuit and the volume control set to –5dB. (This is just below the setting where the headphone output clipped with full-scale signals.) The increase in bit depth now lowers the noisefloor by around 9dB at low and middle frequencies (fig.7), which suggests that in practical use the SU-R1000's digital inputs will give between 17 and 18 bits of resolution. (The same calculation using the preclipping voltage at the loudspeaker outputs gives a resolution of about 18 bits.)

With undithered data representing a tone at exactly –90.31dBFS (fig.8), the three DC voltage levels described by the data were well resolved. With undithered, 24-bit data (fig.9), the result was a relatively clean sinewave. Intermodulation distortion via the Technics amplifier's digital inputs with the MQA filter active was extremely low in both channels. Though the expected aliasing products were present, I could eliminate those in the audioband by reducing the level of the mix of 19kHz and 20kHz tones by 3dB (fig.10).

I tested the SU-R1000 for its rejection of word-clock jitter via its TosLink and USB input using 16- and 24-bit J-Test data sampled at 44.1kHz. All the odd-order harmonics of the 16-bit J-Test signal's LSB-level, low-frequency squarewave were close to the correct levels (fig.11, sloping green line), though a pair of sidebands at ±120Hz can be seen surrounding the spectral spike that represents the high-level tone at one-quarter of the 44.1kHz sample rate.

Turning to the SU-R1000's balanced and single-ended phono inputs, I followed the manual's advice, connecting a separate ground wire from the terminal on the amplifier's chassis to the ground of the Audio Precision analyzer. I primarily examined the phono inputs' behavior at the headphone output, again to avoid damaging the amplifier's output stages with high-level signals. The Technics's phono inputs all preserved absolute polarity.

The phono inputs can operate at full level or have their sensitivity reduced by 3dB, 6dB, or 9dB. Without the attenuation, the balanced phono input, which is only compatible with moving coil cartridges, has a maximum gain of 72.6dB at the preamplifier outputs, 89.1dB at the headphone outputs, and 102.3dB at the speaker outputs. The single-ended phono input, set to moving magnet, offered maximum gains of 56.0dB, 72.5dB, and 85.7dB, respectively. The balanced phono input had an input impedance of 112 ohms across the audioband; set to MM, the single-ended phono input's impedance

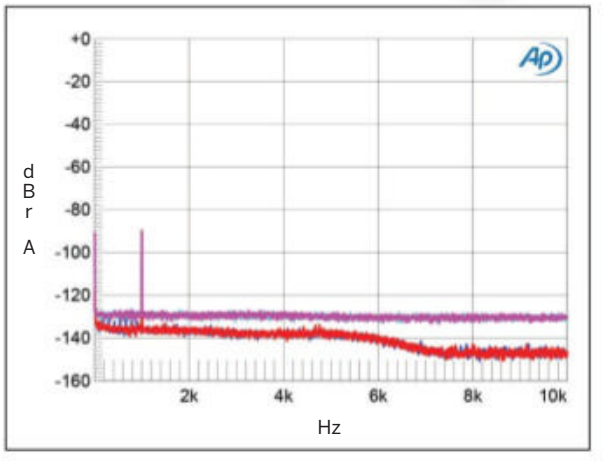

Fig.7 Technics SU-R1000, digital inputs, 20dB attenuation active and volume control set to "–5.0," spectrum with noise and spuriae of dithered 1kHz tone at –90dBFS with: 16-bit data (left channel cyan, right magenta), 24-bit data (left blue, right red) (20dB/vertical div.).

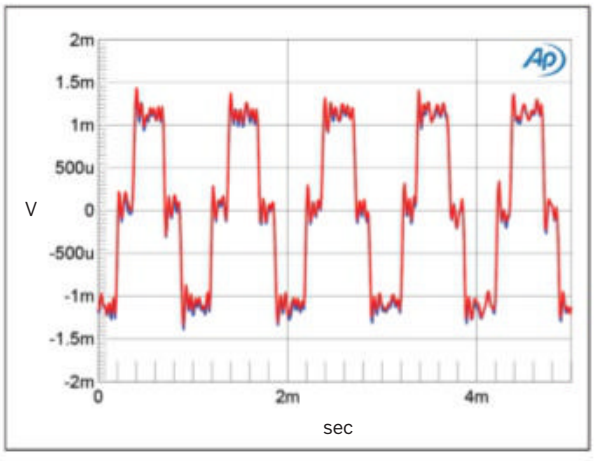

Fig.8 Technics SU-R1000, digital inputs, waveform of undithered 1kHz sinewave at –90.31dBFS, 16-bit data (left channel blue, right red).

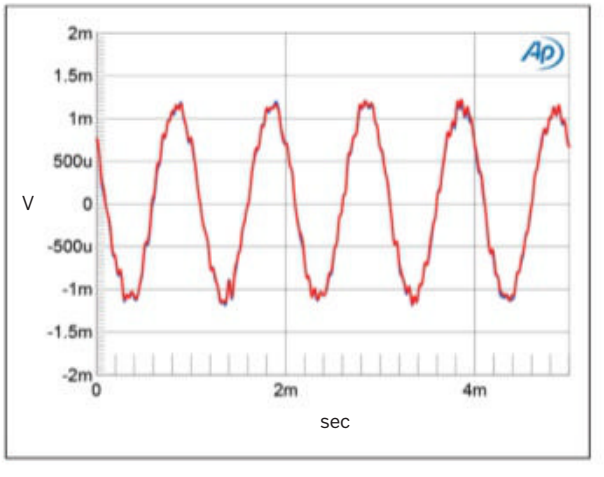

Fig.9 Technics SU-R1000, digital inputs, waveform of undithered 1kHz sinewave at –90.31dBFS, 24-bit data (left channel blue, right red).

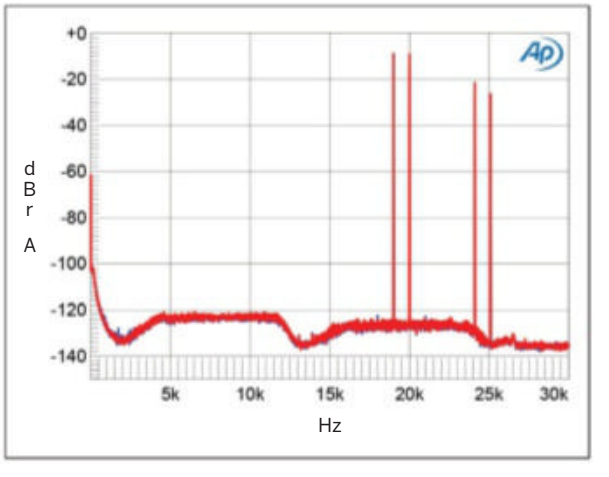

Fig.10 Technics SU-R1000, digital inputs, MQA decoding switched on, HF intermodulation spectrum, DC–30kHz, 19+20kHz at –3dBFS peak (left channel blue, right red; linear frequency scale).

was 44k ohms at 20Hz and 1kHz, falling to 35k ohms at 20kHz.

I didn't test the Intelligent Phono EQ, but even without it the SU-R1000's RIAA correction (fig.12) was extraordinarily accurate—one of the best I have ever measured—with superb channel matching. The switchable subsonic filter (cyan and magenta traces) rolled off the response by 3dB at 20Hz. The MM phono input's unweighted, wideband S/N ratio, measured with the input shorted to ground, was a very good 67.2dB (average of both channels) referred to an input signal of 1kHz at 5mV. Restricting the measurement bandwidth to 22Hz–22kHz increased the ratio to 75dB, while switching an A-weighting filter into circuit increased the ratio to 84.6dB. The balanced MC input's ratios were around 20dB lower due to this input's higher gain.

The overload margins of the Technics phono inputs, measured with no input attenuation and with the volume control set to –30dB to avoid clipping the headphone output, were at least 15.3dB ref. 1kHz at 5mV, MM, and 17.5dB ref. 1kHz at 500µV, balanced MC, from 20Hz to 20kHz. The phono stage's distortion was very low: The only harmonic visible above the noisefloor was the second, at just –90dB (0.003%, not shown). High-order intermodulation distortion with an equal mix of 19kHz and 20kHz tones at a peak input level equivalent to 1kHz at 10mV, was very low in level (fig.13), though the second-order difference product at 1kHz lay at –66dB (0.05%).

As with the Technics SU-R1000's line-level analog inputs, this amplifier's digital and phono inputs offered excellent measured performance.**–John Atkinson**

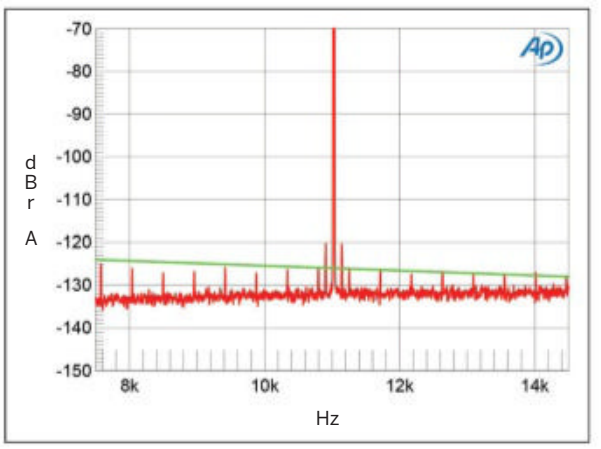

Fig.11 Technics SU-R1000, digital inputs, high-resolution jitter spectrum of analog output signal, 11.025kHz at –6dBFS, sampled at 44.1kHz with LSB toggled at 229Hz: 16-bit data (left channel blue, right red). Center frequency of trace, 11.025kHz; frequency range, ±3.5kHz.

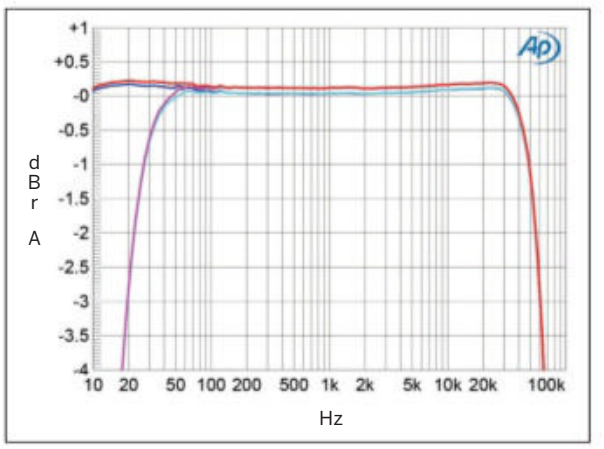

Fig.12 Technics SU-R1000, phono input, response with RIAA correction into 100k ohms (left channel blue, right red) and with subsonic filter (left cyan, right magenta) (0.5dB/vertical div.).

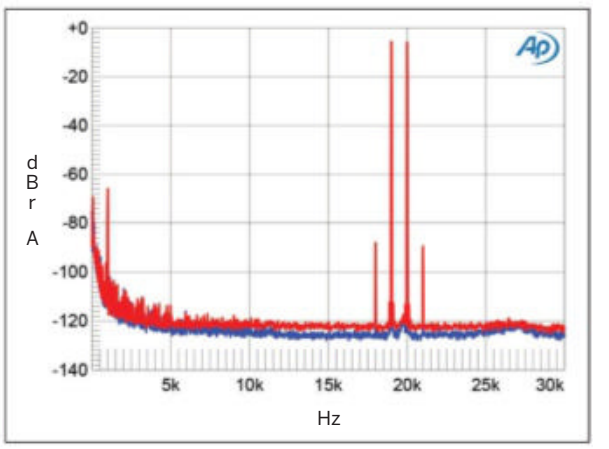

Fig.13 Technics SU-R1000, MM phono input, HF intermodulation spectrum, DC–30kHz, 19+20kHz at 100mV peak input (left channel blue, right red; linear frequency scale).

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NOT TWISTED

TWISTED SISTER GUITARIST JAY JAY FRENCH HAS A NEW LIFE AFTER MUSIC. by **JIM AUSTIN**

Note the stylish footwear. Unless otherwise noted, all photos courtesy of the Jay Jay French archive.

JAY JAY FRENCH HAS A BOOK OUT, BUT IT'S NOT WHAT YOU MIGHT THINK, OR NOT EXACTLY.

FRENCH EARNED FAME IN THE 1980S AS THE LEAD GUITARIST FOR TRANSVESTITE METAL BAND TWISTED SISTER, WHICH PRODUCED SOME OF THE MOST RECOGNIZABLE—AND WIDELY LICENSED—ROCK MUSIC IN HISTORY: "WE'RE NOT GONNA TAKE IT." "I WANNA ROCK."

These days, French stays busy in other ways. He has a podcast in which he chats with other musicians, members of the music industry, and miscellaneous folks. He's a Beatles scholar with an impressive cache of Beatles records and memorabilia—he seems to have kept everything, in pristine condition—and writes a column about the Beatles for *Goldmine* magazine. He's also a passionate audiophile.

The book—*Twisted Business: Lessons from My Life in Rock'n'Roll*—is not just another rock'n'roll memoir. It's a business book, co-written with business guru Steve Farber. The bulk of the book, chapters 4–10, presents Jay Jay's formula for success in words that spell out "T-W-I-S-T-E-D"—"T" for tenacity, "W" for wisdom, and so on, each element illustrated by stories from French's life. I am not a regular reader of business books and have little interest in the topic, but this one strikes me as unusual for the genre, and in my opinion it *does* add up to something real and useful.

Really, though, that's beside the point. What matters is that Jay Jay is busy *promoting* the book, which means he's doing interviews and telling stories. I had the opportunity to sit down with him for several hours over two days in his modest (though very nice) apartment—which, it turns out, is just a 25-minute walk from my Manhattan one. I also got to listen to his excellent hi-fi system.

My exposure to Jay Jay convinced me that he's one of those rare people who are born at the right time in the right place and then make decisions, even if unwittingly, that put them at the center of things and keep them there for a while. In some ways, his story *is the* story of his place and time.

Did I mention that he's an audiophile?

Listening to records

Jay Jay French—born John French Segall—was born in New York City in 1952. The apartment he lives in now is the one he grew up in. He attended his first concert—The Weavers at Carnegie Hall—in 1963, and over the next few years would attend many, many more.

Here's a story from the book, which Jay Jay repeated in our interview: In February 1963, Segall was home sick from school. His mother gave him a table radio to keep him entertained. He was listening to WABC AM, the biggest radio station in the US. The number one song was "Hey Paula" by Paul and Paula. ("I've waited so long for school to be through …") "In those days, they played those songs every

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hour on the hour. 'Hey Paula' was number one, and when I hear that refrain, 'Hey, Hey Paula,' it takes me right back to when I was 11 years old."

Of course, "Hey Paula" was soon dethroned—knocked off by the Chiffons' "He's So Fine," and when it happened, 11-year-old Segall was indignant. Hoping to restore his first sonic infatuation to its rightful place, he went to a record store—Only Records on Broadway—and bought the single. The record never made it back to number one, but now Segall was a record collector.

In 1964, the Beatles arrived. When he saw the Beatles on the Ed Sullivan show, Segall knew what he wanted to do with his life.

Segall sold Boy Scout cookies on commission to earn money to buy a bass guitar. He had been a happy Boy Scout until the year before, and the previous year he'd set cookie-sales records. He liked the scouts—he liked earning merit badges and was working toward becoming an Eagle Scout. But then he got thrown out for having long hair. In need of revenue for the scouts, his former scoutmaster approached him about selling cookies on commission: 10 cents/box.

That entrepreneurial impulse proved enduring. At age 15—about 1967—he tried smoking marijuana. He liked it. He started selling it. He made a little money. He bought more. He sold more. He made more money. He sold other things, too—other drugs. He used the money to buy guitars.

At the Fillmore, he saw big amplifiers. He wanted one. He bought one. He became a regular there. $3 to get in. He saw all the big acts. The first time he saw Led Zeppelin, the Woody Herman Orchestra was the opening act. "Bill Graham did that sort of thing," French told me.

Above: The future Jay Jay French at age 12. **Top:** Twisted Sister v1.0.

He showed me the program for that concert. He showed me other programs. He seems to have saved all of them, in amazing condition. His apartment is not cluttered, but somehow it contains a lot of things. During our time together, he showed me lots of collectibles—records, documents, guitars, portable transistor radios, an original Marconi transistor in a small plastic bag—almost all in great condition. French is the consummate collector—an archivist.

Here's a story anyone who writes about French and this book is likely to repeat: One day, after he'd bought that big amplifier, he got high, put that amplifier in his apartment window—the same apartment, the very same room we were sitting in—and turned it up to 11.

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he told me. "I thought it was the cops. I opened the door. She said, 'You son of a bitch. Do you know how fucking loud you are?'" "I said, 'What apartment you live in? I don't recognize you.' She said, 'I live on …' and gave an address five blocks away. "'You heard me on Columbus Avenue?'"

Jay Jay liked it.

The hippie years

"I'm dealing, and playing in bands, and I'm going to the Fillmore, and at this point, I'm also involved in antiwar activities at my school. … I brought the SDS from Columbia"—that's Students for a Democratic Society—"down to my high school, and I saw H. Rap Brown give a speech.[1] That led to a riot, and then I got thrown out of my high school." They let him back in and then threw him out again. "Then I sued them for violating my constitutional rights." Due to a series of favorable coincidences, the school system wanted to settle. He requested a transfer to another high school where his friends went, and it was granted. That's where he met Eddie Ojeda. They started playing together. "We formed a band almost immediately and played at a talent show and got knocked off the stage by a Jackson 5 wannabe; they killed us."

Segall became a well-known high school revolutionary. He was profiled in a teen magazine, *Ingenue*. He wanted to stay out of trouble, but he got sucked into activism at the new high school and led a student takeover of the principal's office. When the police came, he was in the bathroom. Everyone else got arrested.

He was still in school, but he wasn't going to classes. He had his first acid trip on the day of Martin Luther King Jr.'s funeral.

Here's a point where the story gets hazy, with discrepancies between our interview and the book. He met a girl, a great-granddaughter of Robert E. Lee. He visited her in Richmond, Virginia, near the monument to her great-grandfather. Or maybe he moved there. That's when the Kent State shootings happened. They led to more rioting, including at the University of Richmond, just down the street. Segall went home. Graduation was just a couple of months away, but he hadn't been attending classes.

Above: Photo by Sal DeBenedetto. **Below:** Dealer, activist , and future rock star John French Segall at age 17.

1 Brown, a civil rights activist, was the fifth chairman of the Student Nonviolent Coordinating Committee. He's currently serving a life sentence for killing two sheriff's deputies in Fulton County, Georgia, in 2000. In 2020, the US Supreme Court declined to hear an appeal.

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Far left: The sleeve for Twisted Sister's first, independent 45. **Left:** Twisted Sister, MoFi Edition.

"I said to my mother, 'Look, fuck this. I'm not going back to school.' She's like, 'Well, you're graduating.' I said, 'There's no way I'm graduating. Fuck the man.' 'What are you going to do?' I said, 'I'm going to become a rock star.' I said it because I just needed to shut her up, and [I knew] that would end the conversation." But that was it; he was done.

Segall was in demand. "Everyone wanted me to go on all the revolutionary activities, and everyone wanted me at their parties." Because of the drugs.

Here's a detail I doubt you'd find in very many business how-to books. "Most people don't want to talk about the positive aspects of dealing drugs. But the truth is, I became really self-confident, really street smart, and really good at math. I mean, if it weren't for dealing, I wouldn't be half the man I am today."

Segall moved out of the house and in with Gail—Robert E. Lee's great-granddaughter—and her brother. For two years, he sold drugs, used drugs, jammed, went to shows. Then the drug scene changed. In 1971 or '72, "heroin comes into the scene and wipes out everything just the way they threatened it would."

"We thought it was all hippie flower-power peace, love, pot, hash, LSD." But when heroin hit, "it deteriorated, really bad." Drugs and John French Segall got divorced. "I pulled out of it to save my life at the very last minute. … I stopped on a dime. I said, 'Done. Been there, done that. Don't need it. Goodbye.'

"I said to my mom, 'The good news is, I'm not doing it anymore. The bad news is that I've decided to join a transvestite rock band.'" It was 1972.

Twisted Sister

Jay Jay auditioned for a band called Silver Star and became "the last original member"—his words. It was a promising gig. "I joined an organized band. They knew who they were. They knew what their image was going to be, this transvestite/Bowie thing. Because that's what was happening at the time."

In 1971, David Bowie wore a dress on the UK cover of *The Man Who Sold the World*. The New York Dolls formed the same year. Jay Jay saw them at the Fillmore, several times. "I know the guys, and if they weren't dressed the way they were, they would be laughed out of town. They were a terrible band. I went a lot, because I couldn't believe how much publicity they were getting for a band that sucked so badly." He loved the look, though.

John French Segall needed a stage name. For a while—months—he was Johnny Heartbreaker. But then he put on a pair of shades and became Jay Jay French.

"We immediately got jobs—immediately. That wasn't a problem. The band was a good band."

An important piece of Beatles lore is the years the band spent working the clubs of Liverpool and Hamburg, Germany, before hitting it big. "The Beatles woodshed it for three years," French said. Twisted Sister did it for a decade, although they went through many lineup changes along the way.

"In the tri-state area in the '70s, the drinking age was 18. Phony proof could be made in shop class, … everybody had phony proof." Music clubs proliferated, starting off in small corner bars and steadily growing. "200, 300, 400 people, and then 500, 600, 700 people, … then 5000 people. There were clubs that held 5000 people just to go out and hear a band do Zeppelin covers, or Doors covers for that matter. If you are part of that circuit and you grew into that circuit, … 10 years into it, you're just as good as any professional rock band, because you're playing in front of thousands of people all the time." Twisted Sister was playing five shows a night, six days a week. They played thousands of shows.

Jay Jay had left substance abuse behind; the other band members hadn't. "The problem with the band was that it was full of drinkers—not druggies, but drinkers, drinkers who read the magazines and wanted to emulate the Rolling Stones or The Velvet Underground and just get fucked up, because that's the beauty of the culture.

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The resulting works-of-art phono cartridges take time but there are good reasons for this, as Roy Gregory found in his recent review for TheAudioBeat.com:

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"When it starts to impact your ability to get to gigs, play gigs, get to rehearsals, meet with producers, get forward momentum to your career, it's not good. The band had fits and starts and fits and starts. Within two years, the singer and the drummer got in a fight, and the singer had brought a rifle … because we were playing in upstate Massachusetts and there was a family of hunters who lived in the same building that the band was staying in and they said to Michael [O'Neill, the founding lead vocalist], "Next time you come up, we'll go hunting.

"I walked in and watched this potential murder. I thought to myself, my life is over. I'm watching a murder. I'll be a witness at a murder trial and my career in rock'n'roll was done. Michael threw the gun down, and they had a fist fight, and we broke up that band." Jay Jay's girlfriend left him. His mother died. It was 1974.

French then fell into an extended, deep depression. "Stopped eating, stopped sleeping. I should have gotten professional help. I did not." On the day of his mother's funeral, he started keeping a diary. In time it became his special form of self-therapy. "I was able to go back through these diaries and see my mental state and see where I overcame all these problems and how they were really big problems at the time, but they all worked themselves out. … Some people will say, 'I prayed to God. God got me through.' Some people will say, 'I just drank myself through it.' … All I ever said was 'Man, I got to figure this shit out.'"

French gradually emerged from his depression,

Jay Jay French's Paul of fame: A '52 Gibson Les Paul, Les Paul Juniors from '54 and '56, and a 1962 Gibson ES-35.

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and the band reinvented itself several times. They were still a bar band, doing covers. As singers changed, the music did, too, from glam David Bowie to Rod Stewart to Led Zeppelin. During one stage, they played Percy Sledge—picture Twisted Sister covering "When a Man Loves a Woman." For a while, Jay Jay took over vocals.

Classic rock'n'roll road story: Mel, who was the drummer and the founder of Silver Star, "conspired to screw me and the bass player and take the truck." It would be their last gambit with the band. "They took the truck from us and held it for ransom." They asked for $2500 but settled for $1000. "We paid them off and then got the truck back and the gear was destroyed."

The two remaining members of Twisted Sister, Jay Jay and bassist Kenny Harrison Neill, took regular jobs for a while: Jay Jay was working as a waiter for a catering company. Then things started to take shape. Jay Jay invited his old friend Eddie Ojeda to join the band. Dannie "Dee" Snider was hired as singer: Dee could sing Led Zeppelin covers. They hired a new drummer, but he wasn't the last.

By this time, the band had a strict policy: no drinking or drugs. Kenny, a closet alcoholic, joined AA, which led him to the church, which alienated him from the band. Kenny was replaced by Mark "The Animal" Mendoza, formerly of seminal punk band The Dictators.

"We went through a succession of drummers. Drugs and alcohol issues, just ridiculous, stupid, one after the other, like *Spinal Tap*." Like *Spinal Tap*, in which the drummer spontaneously combusts, or anyway that's the story. Finally, A. J. Pero joined the band. It was that version of the band—the 11th iteration—that hit it big.

Above: The defaced original fretboard from Jay Jay's '52 Gibson Les Paul. **Top:** Jay Jay French today.

Success

Cue the money, cocaine, wild parties, women. *Not.*

This wasn't that kind of band. Jay Jay French wasn't that kind of rock star. For one thing, he was too busy managing the band. "As much as I would love to have become a rock star, I'm too busy fighting with the trucking company and the lighting company, and my road crew is fucking up, and you don't get any rest from this. In a way it's good, because it keeps you grounded at all times. Because you can't really lose yourself in this rock stardom, because you're too busy dealing with the bullshit that you have to deal with for business."

For another thing, by the time the band hit the bigtime, Jay Jay was a seasoned pro; he knew better than to take success too seriously. "I never believed that when we made it, we were going to make it forever, so I never altered my lifestyle. I lived exactly the same way. … I just always said to myself that fame is rented and it's bullshit anyway. They'll love you for a while, and then they won't love you anymore. Why get sucked into it?

"I was 34 when the band broke really big. At that point, I was so tired and cynical that I just wanted a check. I didn't give a shit about the fame, and besides, who wants to be famous?"

Jay Jay French, audiophile

Soon after I arrived at his apartment, Jay Jay put a record on his VPI 40th Anniversary HW-40 Direct Drive turntable with the gimbaled (not unipivot) version of the Fat Boy tonearm. The cartridge was—is—Ortofon's MC A95.

Jay Jay uses Pass Laboratories amplification: the XP-32 preamplifier and XA30.8

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stereo amplifier. His speakers are Magico A3s, the smaller brothers of the A5 I reviewed a few months back. He has a PS Audio PerfectWave SACD Transport and DirectStream DAC, and his phono preamplifier is the Simaudio Moon 810. He uses Wireworld, AudioQuest, and Triode Wire Labs cabling and a Chord English Electric network switch. The room's walls are QuietRock over cinderblock. A whole-room rug covers the wood-on-concrete floor. It's a lovely system, ideally suited for the smallish room it occupies. It's the latest iteration of a decades-long quest for better reproduced sound.

"The first stereo I bought was a Sony receiver, a pair of KLH 6 speakers, an AR XA manual turntable, and a Shure M91 cartridge. … You bring it home, you get the zip cord, and you plug it in.

"Oh my God, all of a sudden, life opened up. I think within a month, I bought a copy of *Stereo Review*, and an advertisement in one of the side panels was for a Rabco arm. I thought, 'That looks cool. A Rabco arm. It tracks the way a record is cut. Wow. That's kind of cool.' I bought it. It came with a C-cell battery. I ripped out the tonearm, I drilled the base, I mounted the arm, and it worked. That was the beginning of the whole fucked-up, never-ending search of upgrades."

At first he was a modder: He'd buy a new turntable and rip out the tonearm, put in a linear-tracking arm. He'd do the same thing with guitars: buy a Gibson Les Paul and immediately replace the pickups, gouging a hole.

He and a friend had the same Dynaco amplification components—but his friend had built his, while Jay Jay had bought his already built. His friend's sounded better. "I thought, "Wow. Same gear can sound better? Same company, same stuff, but it sounds better because maybe he took more time to wire it? I was curious about why, sonically, it sounded better."

Jay Jay has always had a special love for turntables—he loves their mechanical nature. He bought a Garrard Zero 100 with the tangential arm. Then he bought an Empire 598 Troubadour, "because it was gold and it looked like King Tut's tomb." He replaced the 598 with a Dual 1019, the Dual with a Thorens TD-124. And so on. "This is a path that cannot be unusual to any of the people who read your magazine, of a certain age."

At this point, our discussion digressed to Jay Jay's guitar collection. He showed me a 1952 Gibson Les Paul Gold Top. A 1953 Martin 00-18. Several Les Paul Juniors from various years. "They're my favorite. They were only $99 new, but they're what Leslie West played. They're just tone machines." A "dead-mint" 1956 Fender Telecaster. A '54 Les Paul Junior—Jay Jay's "holy grail" guitar.

For years, while touring, he didn't have much time for hi-fi. But then one day he had a little more time, and he picked up a copy of *Stereophile*. "I moved back here to this apartment. I picked up my first copy of *Stereophile* and my first copy of *[The] Absolute Sound*, and that just fucked me up completely."

He bought a Klyne preamp. He bought Acoustat 2+2 speakers and put them in a small room. He bought an Audio Research SP-11. And on and on.

After so many years playing loud rock music, Jay Jay admits to some hearing loss, but he can still hear the subtleties of a good hi-fi system. "I cannot hear my wife talk to me," he told me, "but I can tell you the cables were changed and this changed and that changed."

Not too many rock stars, I'm thinking, go into retail sales. Jay Jay did: He took a job at Lyric Hi-Fi, one of the country's most prestigious dealers. For four years, he sold equipment and hung out with the sales staff and learned their secrets. He took home the finest equipment and listened to it in his own system. He described some of his experiences in a My Back Pages essay he wrote for *Stereophile* on the occasion of Lyric's closing.[2]

A lifetime of experience—but especially his experience at Lyric—have left him a little bit cynical about the hi-fi scene. For one thing, he isn't happy with the increasing prices of luxury gear. He visited Michael Fremer's place recently, at a time when Mikey had three 'tables on hand that together cost more than a million dollars. "I realized, I've reached the mountaintop of crazy," he said to me. "I have reached the fucking last stop in Crazyville."

And yet, he remains a serious and committed audiophile. "I'm fascinated by the ongoing technical desires of companies to get better and better and better. To get closer to the mixing console. Because at the end of the day, that's as close as you're going to get. … I don't care how much bullshit someone tries to feed you, you don't get any closer than the mixing console." I'd say that's Jay Jay's audiophile philosophy in a nutshell, and it's a good one. "How many layers of reproduction take you away?" ■

2 See stereophile.com/content/goodbye-house-mike-kay-built.

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BOOK REVIEW

BY JOHN SWENSON

THIS ISSUE: A book/CD package documents an important but unrecognized tributary to the river that is American pop music.

THE SECRET HISTORY OF WASHINGTON, DC, R&B

R&B in D.C. 1940-1960 (Bear Family BCD 17052 16-CD, 2021) adds a new chapter to the Bear Family Records deep dive into American popular culture. Historian/collector Jay Bruder worked with a small army of researchers and editors to compile the beautifully designed book and its accompanying 16-CD discography. The box unearths an obscure story about the musical history of the Black population in the nation's capital between the era of big band swing jazz and early rock'n'roll. Though the music part of the package covers only about two decades—the last recording date is 1962—the history goes back to the end of the 19th century.

One of the great ironies of the story is that very little music was recorded in the District of Columbia due to lack of a music-business infrastructure, even though DC was where the industry itself began—arguably—with Alexander Graham Bell's invention of the Graphophone at Volta Laboratories in Georgetown. With recording labs based in DC, area artists were well represented at the dawn of the recording age, but, as Bruder notes, no commercial record company operated in the city between 1900 and 1944. "During the 1920s and 1930s," he writes, "Washington artists had to leave town to make a record."

Even so, the Washington, DC, area was home to many Black musicians, nurtured by a school system that provided excellent music education and a vibrant club and theater scene. The book walks us through the history of the indie labels that began recording DC R&B in the mid-1940s. The companies were run by eccentric entrepreneurs who were usually enthusiasts, not businesspeople. The recordings themselves are often primitive; during the 1940s, vocal groups were making drugstore acetates in recording booths, and the earliest professionals were using only slightly more advanced technology.

A lot of the more successful recordings by DC artists were leased to or recorded by bigger companies. There is no identifiable "DC sound." We hear Washingtonians working out of gospel, vocal group, and swing-era traditions as they head inexorably into rock'n'roll.

Lillian Claiborne, co-founder of DC Records, looms over this scene beginning in 1947. Over the following two years, she released 50 78rpm discs by local groups including the Progressive Four, led by vocalist Harmon Bethea, who would later resurface in the Cap-Tans and other groups. Claiborne had an unusually close relationship with her artists, taking care of their publishing, arranging local live bookings, and licensing their recordings. "For three decades," writes Bruder, "she was the person to see if you wanted to make a record in DC." Claiborne persuaded two very popular local musicians, Frank "Dual Trumpet" Motley and drummer T.N.T. Tribble, to join forces. Starting with the raucous 1951 party anthem "Bow Wow Wow," Motley and Tribble released a series of records, together and separately, some featuring local star Angel Face, a New Orleans–born vocalist. "Little House Party" (1952) evokes a raucous night out; "T.V. Boogie Blues" (also '52) showcases future Basie-ite Frank Wess on tenor saxophone; Motley's "Honkin' At Midnight" ('55) offers another party scene; Tribble cut the Shag anthem "Madison Beat Part I & II" ('59); Tribble's terrific "I Get My Kicks in the Country" ('52) includes a take on the animal-centric tune known as "They All Ask'd for You," later famously recorded by the Meters.

Ahmet Ertegun's legendary stewardship of New York–based Atlantic records made him one of the most powerful figures in the music industry, but he began his career with the small, unsuccessful DC label Quality Records. Ahmet and his older brother Nesuhi lived in DC, where their father served as an ambassador from Turkey. The brothers were avid traditional jazz fans, well-versed in the local music scene. In '46, Ahmet partnered with Herb Abramson of Jubilee Records and Max "Waxie Maxie" Silverman, owner of the Quality Music Store. They named the label Quality Records after Maxie's store. Their only release, "Thursday Evening Blues," went nowhere. A year later, Ertegun started Atlantic with Abramson and investment capital from DC dentist Dr. Vahdi Sabit. DC artists The Clovers and Ruth Brown figured prominently in Atlantic's early success, and the legendary 1957 "Bip Bop Bip," recorded by Don Covay as "Pretty Boy" with Little Richard's backing band, was brought to Atlantic by Sabit. The track is the veritable definition of Black garage rock. The great Barrence Whitfield opened his 1984 debut album with it.

Lloyd Price, a teenage sensation out of New Orleans after his discovery by Dave Bartholomew, revived his career upon moving to DC after his discharge from military service. In 1956, Price formed KRC Records. The first release, "Just Because," was an immediate hit. Price soon discovered that distributors would order records from indies but wouldn't pay for them. Price licensed "Just Because" to Paramount while the disc still had life. It peaked at #3 on the R&B charts and #29 on the pop charts.

Bo Diddley was also in DC during the late '50s, cutting sides in his home studio. That's Diddley on guitar with his band backing up the great Washington vocalist Billy Stewart on "Billy's Heartache"/"Baby You're My Only Love" ('57). Diddley also plays on the '57 Marquees releases "Wyatt Earp" and "Hey Little School Girl."

Sonically, the 16 discs can be tough slogging. Many of the recordings are compromised by inferior production and crude reverb. And yet, as Bruder points out, those same recordings are notable for the emotional depth of the performances, and many of the tracks have a "live" sound. Doug Pomeroy handles the thankless job of remastering to make it all hang together; his painstaking work makes the package at least listenable. In any case, it's worth it, since there's no denying that this collection casts light on the secret history of music culture in one of America's most important Black communities. ■

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REVINYLIZATION

BY TOM FINE

THIS ISSUE: The new vinyl reissue of the Rolling Stones' *Tattoo You* is hot in more ways than one.

What's the point?

Tattoo You is near and dear to me. It came out in August 1981, just before I entered 10th grade, the age when a person's rock'n'roll aesthetic begins to take shape. This album was formative.

I knew about the Rolling Stones mainly through the *Hot Rocks* compilation, from listening on radio to hits from *Some Girls* (which came out when I was too young and sheltered in leafy suburbia to understand the urban grit and decadence described in its lyrics), and from *Emotional Rescue*, which I owned, and which I thought (and still think) lacks interesting music in the grooves to match the cool cover. I figured the Stones might already be too old to rock.

Tattoo You proved me wrong and rocketed the Stones into the MTV '80s. From the first spin, I dug everything about this record. I still do. It rocks, it rolls, and side 2 has quieter, intense, textured sorta-ballads—and there's Sonny Rollins on sax! It was varied, smartly sequenced, well-paced, and wow, did Bob Ludwig cut that original LP loud!

It was the loudest thing on my turntable at the time, dynamic and punchy in all the right rock'n'roll ways. Charlie Watts's drums popped out of my New Advent loudspeakers like sound-rockets. Bill Wyman's bass spread around the floor and compelled my feet to move. Mick Jagger's vocals sneered at me, front and center. And the wonderful Stones twin-lead guitars were shooting arrows from the sides.

It turns out that *Tattoo You* is a complex, glorious amalgamation of collected parts. Some tracks were birthed back in Kingston, Jamaica, during the *Goats Head Soup* sessions and some during sessions in Munich, Germany, for *It's Only Rock 'n' Roll*. Most began during the *Emotional Rescue* sessions in Paris and were set aside in favor of the less-compelling tracks on that album.

The 40th Anniversary reissues of *Tattoo You* include the 5-LP Super Deluxe version reviewed here. The first LP is a new cut of the original album. The second contains nine newly released tracks from the same batch of 1970s recording sessions. LPs 3–5 document the live concert at Wembley Stadium on June 25, 1982.

The first two LPs were cut by Bernie Grundman from Steve Marcussen's high-resolution digital master files. LPs 3–5 were cut by Naweed Ahmed, at Katara Studios in Doha, Qatar, from digital files mastered by Mazen Murad. Plating, pressing, and manufacturing were at GZ Media in the Czech Republic. Also included is an amply illustrated, 124-page 12×12 hardcover book and a lenticular cover image on the album box: Look one way and it's Mick's tattoo'd head; shift the image and it's Keith's.

As a physical artifact, this is a heavy, pretty thing. The book contains dozens of color photographs, a detailed, context-setting essay and track-by-track survey, interviews with coproducer Chris Kimsey and cover photographer Hubert Kretzschmar, and an essay about the 1981–82 tour, all written by Jeff Slate. The LP packaging is handsomely printed heavy cardboard—but that's a defect, not a virtue: The records are stuffed into cardboard inner sleeves that grip them tightly; almost every platter was visibly scuffed on first removal. At this level of deluxe, soft, plastic-lined inner sleeves are mandatory.

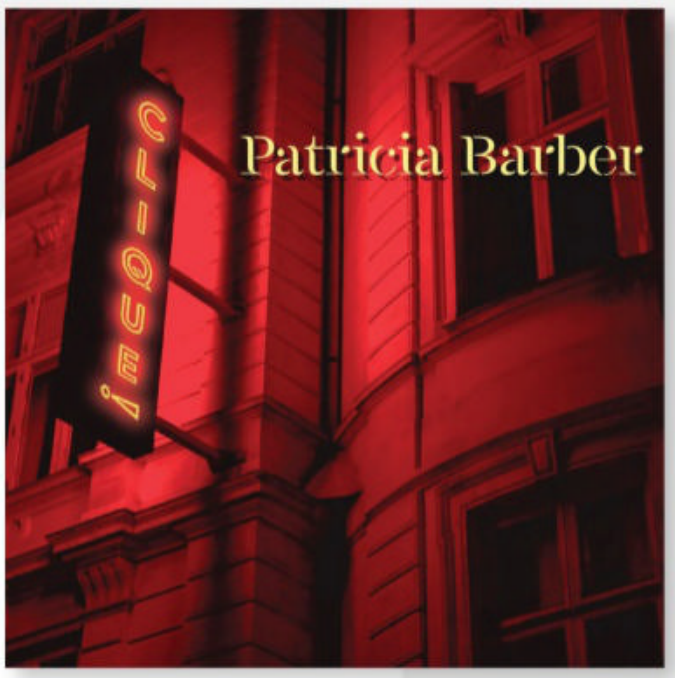
The extra musical content is a mixed bag. Most of the studio tracks on the second LP sound like incomplete cast-asides, but on side A, "Fiji Jim" and a neat cover of "Drift Away"—a hit for soul singer Dobie Gray—stand out. On side B, "Come to the Ball," from the *Goats Head Soup* sessions stands above the rest, featuring tasty Mick Taylor slide-guitar licks. "Fast Talking, Slow Walking," from the *It's Only Rock 'n' Roll* sessions, also features Taylor. It's also good.

The Wembley concert sounds like the book essay's description of the tour's stadium shows. The band remembered being spread out on a huge stage, with Jagger and the guitarists running and dancing way out on the side ramps, far out of sight of Charlie's drum riser. The band is not particularly tight, and Ronnie Wood's guitar is often buried in the mix. Ian "Stu" Stewart and Chuck Leavell add texture and depth on keyboards along with sax men Gene Barge and Bobby Keys. But the overall feeling is of distance: too much space between the band members for them to lock in all the time and too little intimacy with the huge crowd.

The 1982 album *Still Life*, which was tightly edited together from numerous stops on the US tour, better captures the energy of the Rolling Stones at their best at that time. Of the songs that overlap *Still Life*, the American performances and recordings are better. That said, the Wembley concert has more songs, including some deep-catalog gems like "Let It Bleed," "She's So Cold," and the Stones' excellent cover of "Just My Imagination (Running Away with Me)."

Soundwise, these platters are a letdown. The album and bonus studio tracks were cut from hypercrunched digital tracks, which renders them fatiguing at rock'n'roll listening levels and shaves the pop and smash off Charlie's drums. The original Ludwig-cut LP is superior in every way, the standing definition of what a rock LP should sound like. The live material is less crunched; its washed-out sound seems more the result of the original recording and mixing than the mastering and cutting.

It's a pity because this album is such a rocker. Would it have been that much more trouble to cut a stand-out LP from either the master tape or a noncrunched "flat" transfer? The smart buyer will save some coin and get the CD set. Why pay extra for nothing better? ■



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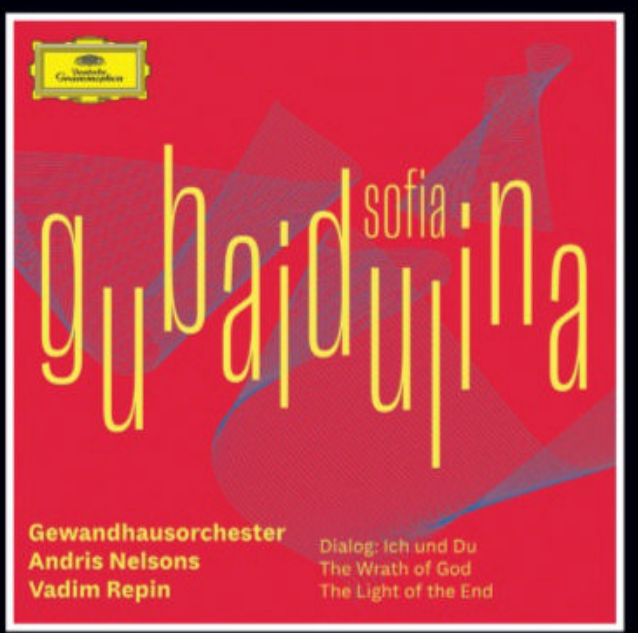
EDITOR'S PICK

RECORDING OF THE MONTH



SOFIA GUBAIDULINA
Dialog: Ich und Du; The Wrath of God; The Light of the End

Vadim Repin, violin; Gewandhausorchester Leipzig, Andris Nelsons, cond.
Deutsche Grammophon 4861457 (auditioned as 24/96 WAV). 2021. Everett Porter, Bernhard Güttler, prods.; Porter, Sebastian Nattkemper, Benedikt Schröder, engs.
PERFORMANCE ★★★★★
SONICS ★★★★★

At 90 years of age, Sofia Gubaidulina has honed her musical language amidst conflict. Since 2003, the profoundly religious, visionary, and visceral Russian composer has written three huge, prescient works that depict in musical terms a standoff between God and humankind. All receive their world premiere "live" recordings in this sensational-sounding, system-demanding outpouring from Andris Nelsons and the venerable orchestra that Felix Mendelssohn once led, the Gewandhausorchester Leipzig.

Gubaidulina, whom Nelsons appointed Gewandhaus's composer-in-residence through 2022, has been working with the conductor since he and the Boston Symphony Orchestra premiered her Triple Concerto in 2017. Both the recording's opening work—Gubaidulina's third violin concerto, *Dialogue: I and You*—and its tour de force companion for huge orchestra, *The Wrath of God*, received inspiration from her oratorio, *On Love and Hatred*. According to the liner notes written by Tobias Niederschlag, the oratorio "constitutes Sofia Gubaidulina's appeal to humankind to follow God's commandments and to overcome hatred through the conciliatory power of love."

Dialogue: I and You was written for violinist Vadim Repin, who premiered the work in Novosibirsk in 2018 before presenting its German premiere with Nelsons in the Leipzig Gewandhaus in December 2019. The only thing small about the 11-part violin concerto, whose title harks back to philosopher Martin Buber's treatise *Ich und Du*, is the size of the violin that struggles to assert its voice..

Shortly after Repin's violin sounds its first plaintive notes, thunderous percussion booms its overwhelming reply. As we catch our breath, the violin struggles to assert its voice, only to get beaten down again and again. In Part 5, it feels as though the violin's voice may be crushed entirely. Then all hell breaks loose, and humankind seems to cry out for salvation. The onslaught is intense, as soloist and sound system struggle to maintain composure. To the extent that music can prophesize the future, the outlook is not good.

Gubaidulina's *The Wrath of God* received its pandemic-delayed premiere in an empty Vienna Musikverein in November 2020, six months before this recording was set down. "God is wrathful," Gubaidulina said of the work before the performance. "He's angry with people and our behavior. We've brought this down on ourselves." An intensely visceral depiction of the Day of Judgment, the work begins with huge, ominous brass. Amidst cacophonous screams and thunderous percussion, Gubaidulina takes Shostakovich's depictions of horror one step into the present. *The Wrath of God* is breathtaking, with quieter passages that sound like the calm before the final storm. (Don't miss the huge collective in-breath of the wind players at the start of part 5.) Subsequent alarming outpourings shake speakers and listener before—in a work dedicated "To the Great Beethoven"—a final passage harks back to the late-18th/19th century master's monumental achievements.

The Light of the End received its world premiere in Boston Symphony Hall in 2003 under Kurt Masur, who was once principal conductor of the Leipzig Gewandhaus Orchestra. Niederschlag claims that the work's title refers to the optimism of a dazzling finale in which harp, triangle, and all manner of high-pitched instruments reflect the musical equivalent of light—but I hear the ending as less a ray of hope than a reflection of salvation that arrives only in the afterlife; Gubaidulina's summation of the work as the "irreconcilability of nature and real life" does not contradict this interpretation. Certainly its opening's utter turmoil suggests ultimate conflict.

Some parts of this and the other works are gorgeous even when they sound as if the world is caving in. It's hard to imagine anyone surviving Gubaidulina's sonic apocalypses; it's also impossible not to give thanks for the beauty in her unflinching voice.

The recording presents a supreme test for electronics and room acoustics. From a huge tuba blatting as low as a tuba can blatt to violin, triangle, and more soaring to the heavens, every audible frequency is on display. While I doubt these pieces will replace favorite orchestral blockbusters—Mussorgsky's *Night on Bald Mountain*; Ravel's orchestration of "The Great Gate of Kiev" from *Pictures at an Exhibition*; and the choral endings of Beethoven's Ninth and Mahler's "Symphony of a Thousand"—Gubaidulina has composed some of the most powerful and forward-looking music of our day. To experience the sound of genius put to the service of humanity, look no further.**—Jason Victor Serinus**

CLASSICAL

FANNY MENDELSSOHN, STRING QUARTET; FELIX MENDELSSOHN, STRING QUARTETS 2, 6

Takács Quartet

Hyperion CDA 68330 (CD). 2021. Judith Sherman, prod.; Mike Quam, eng.

PERFORMANCE ★★★★★
SONICS ★★★★½

The big surprise is Fanny Mendelssohn's Quartet: Hyperion released another recording just two years ago, but here it sounds a stronger piece. The Takács, with its firm bowings, full-bodied tone, and precise intonation, find stature in it that eluded the estimable Nash Ensemble. The first movement, melting and incisive by turns, still sounds like a warmup for the second, a bouncy scherzo relieved by legato and contrapuntal passages. The *Romanze*, more intricate than I'd remembered, still sings simply; violinist Edward Dusinberre's pinpoint tuning makes his high lines soar. And the players smoothly elide the *moto perpetuo* finale's bustling first theme into the second's accompaniment, maintaining buoyancy as the arching phrases build in the home stretch. It's rather impressive.

These two of Felix's quartets are, of course, known quantities and fine works, though hearing them together points up some of his compositional tics, particularly his reliance on short, repeating motifs to produce agitation. Still, there's much to admire. In Op.80 (Quartet 6), the Takács players produce waltzlike inflections in the scherzo's strongly marked hemiolas; in the finale, the Gypsy-flavored opening moves into the lyrical second group without breaking stride. Op.18 (Quartet 2) is perhaps less imaginative, but I enjoyed the players' solemn intoning of the opening, choralelike theme, and the way they don't sacrifice tonal firmness in the *Intermezzo*'s scurrying *Allegro di molto*. Both slow movements are carefully gauged, landing *just* this side of sentimental.

As usual with Hyperion, the players are clothed in a handsome yet unobtrusive ambience. I'm not sure whether the playing or the recording is to blame for a slightly edgy treble, but a small volume cut sets things to rights.—**Stephen Francis Vasta**

DEBUSSY

Pelléas et Mélisande: Suite (arr. Nott)
Schoenberg
Pelleas und Melisande

Orchestre de la Suisse Romande/Jonathan Nott
Pentatone Music PTC5186782 (CD). 2021. Renaud Loranger, Erdo Groot, prods.; Groot, Karel Bruggeman, and Jean-Marie Geijsen, engs.

PERFORMANCE ★★★★★
SONICS ★★★★★

Standard Pelléas programs feature helpings of Sibelius and Fauré. Nott eschews both, linking his suite from Debussy's opera with Schoenberg's tone poem.

Nott's suite attempts to depict not the opera's plot, which is barely there, but the emotional trajectories of its three principals. Listeners who don't know the opera well can still luxuriate in the composer's shimmering, lambent sonorities. Changes of texture, or sustained woodwind tones (probably Nott's minimal interpolations), signal scene changes. The first Interlude is marked "A forest"; still, I was startled at the kinship with Wagner's *Forest Murmurs*.

Schoenberg's more overtly dramatic take on Pelleas emulates a Richard Strauss tone poem, casting it in four "movements"—again noted in the track listing, again not readily audible. The contrast with Debussy is stark. Schoenberg's textures are dense, even in the playful Scherzo, and an anxious, disturbed undercurrent propels even his most expansive passages. "The Slow Movement" (its actual title) brings an impassioned Straussian dynamism, but the interplay of motifs in the "Recapitulatory Finale" is straight out of Schoenberg's own *Transfigured Night*.

Nott limns both scores with commanding assurance and a keen eye on the structure. His clean shaping, carefully sculpted cadences, and small-scale surges in the Debussy are particularly fetching; he projects Schoenberg's textures, no matter how full, in perfect balance. The Geneva players are more polished than their early-stereo forebears. The woodwinds are adept and sensitive; the horn choir infuses the Debussy with warmth. Save for a single peaky trumpet note in the Schoenberg, it's a true feast for the ears in Pentatone's sumptuous reproduction.—**Stephen Francis Vasta**

J.S. BACH: THREE OR ONE

Fred Thomas

ECM New Series 2640 (CD, download). 2021 Thomas, prod.; Alex Bonney, Elliott Parkin, Rob Sutherland, Pierre Alexandre Tremblay, engs.

PERFORMANCE ★★★★★
SONICS ★★★★★

The busy British pianist Fred Thomas has executed several radical reworkings of Bach's music. From postproduction reframing to playing cello suites on the tenor banjo, Thomas has shown himself to be both fearless and deferential in his interpretations. He remains faithful to the source, radical in execution but beholden to the intention. (Thomas is capable of irreverence, though, as a recent, cheeky Richard Wagner project demonstrated.)

In Thomas's ECM New Series debut *Three or One*, the warmth of his obeisance pays off like never before. The title suggests the methodology: works written for solo performer played either as solo or trio. Most of the two dozen short pieces are drawn from Bach's *Orgelbüchlein* (which in his liner notes Thomas pronounces as amongst Bach's "most concisely radical creations") and arranged for piano, violin, and cello, a grouping that only became popular in the generations following Bach.

But these aren't simple transcriptions. Bach's music is famously open to interpretation, with such indicators as tempo markings and even instrumentation often left off his manuscripts. Thomas accepts those liberties as a jazz musician might—he's spent time in both the jazz and classical realms—without trying to make a jazz record. The musicians—violinist Aisha Orazbayeva and cellist Lucy Railton—move with comfort and ease, making the record more session than recital. The fact that the three have known each other since they were teenagers no doubt lends to their toasty renderings.

The trio pieces are interspersed with Thomas alone at the piano, and the set is sequenced into a convincing, hour-long suite by ECM founder Manfred Eicher. The rich clarity for which his label is famous makes *Three or One* an easy, joyful listen.—**Kurt Gottschalk**

BRITTEN, *Young Apollo;*
MILHAUD, *Le Carnaval d'Aix;*
FINZI, *Eclogue*;* **RICHARD STRAUSS,**
Le bourgeois gentilhomme: Suite

Joshua Pierce, piano, Žilina Chamber Orchestra, *Slovak Radio Symphony/Kirk Trevor
MSR Classics MS 1756 (CD). 2021. Emil Niznansky, prod.; Hubert Geschwandtner, eng.

PERFORMANCE ★★★★★ **(FINZI** ★★★★½**)**
SONICS ★★★★★ **(FINZI** ★★★★½**)**

The performance of Finzi's *Eclogue*, this program's least familiar item, is first-class. Joshua Pierce intones the flowing chordal start with clear, limpid tones; shortly thereafter, the strings float in easily around the piano. This opening builds to an impassioned climax; there follows a gently rocking passage, and then a marchlike section that turns stoic. The soloist maintains a limpid clarity throughout, the strings under Kirk Trevor's direction are shapely and nuanced, and it all reproduces with a lovely, airy transparency.

The rest of the program goes to the decidedly lesser Žilina Chamber Orchestra. The Strauss suite, its piano part *obbligato* rather than *concertante*, offers fine moments in the more lightly scored movements, or where the liquid, sensitive oboe and clarinet take the lead. The finale builds effectively, and Trevor gets expressive playing in the Lully minuet, the *Courante*, and Cleonte's entrance. But the cautious *Overture* is genial rather than sparkling, and the brasses in *The Fencing Master* positively lumber, though Pierce still manages to convey a sense of poise. The climaxes tend to turn opaque as they expand.

The Milhaud reminds me of Poulenc without the outward sophistication, colored by off-kilter dissonances. The opening is crisp; the *Isabella* and *Corviello* sections are searching and pensive; and the last six, bright-eyed movements end things cheerfully. But the orchestra frequently sounds backwardly balanced, wind soloists excepted, and Pierce's runs only shimmer in the higher octaves: The lower reaches are tubby. The latter is also true in the Britten, where the strings, while neat, sound utterly mystified. I wanted to like this issue better.**—Stephen Francis Vasta**

SOL & PAT
Sol Gabetta, cello and Patricia Kopatchinskaja, violin

Alpha757 (24/96 FLAC download). 2021. Peter Laenger, prod. and eng.

PERFORMANCE ★★★★½
SONICS ★★★★½

For fans of these two highly idiosyncratic artists, the only surprise this album may hold is the music. Others may reel as much at the spontaneous improvisatory nature of the playing as the wildness of the repertoire and the uniqueness of its sequencing.

If there's anything that Leclair's short *Tambourin in C major* and C.P.E. Bach's *Presto, Helm 66 VI* have in common with two movements from Jörg Widmann's *24 Duos for violin and cello*, Francisco Coll's *Rizoma*, Marcin Markowicz's *Interlude*, Julien-François Zbinden's *La fête au village*, Xenakis's *Dhipli Zyia*, Ligeti's *Hommage à Hilding Rosenberg*, Ravel's *Sonata in A minor for violin and cello*, and Kodály's *Duo for violin and cello in D minor, Op.7*, it's how they push the envelope. It's a perfect repertoire for longtime friends who have no trouble digging in and letting loose in ways that might terrify more buttoned-down artists. Even the 80-minute program's final arrangement of J.S. Bach's short *Prelude No.15 in G major*, BWV 860 from *The Well-Tempered Clavier, Book 1*, sounds thoroughly modern and adventurous in these women's hands.

The conversation between Sol and Pat that replaces traditional liner notes is almost as revelatory as the playing. They texted Coll several times to learn how the piece he composed for them should sound, and they acknowledge the few wrong notes in their first read-through. Markowicz's quirky *Interlude*, in turn, won their four-minute-max Composition Competition on Facebook. And they were attracted to the "intoxicated frenzy" of *Tambourin*.

Three thumbs up for this madcap, joy-filled adventure in which, in Sol's words, "New music stimulates one's curiosity, and older music closes the circle."
—Jason Victor Serinus

JAZZ

JULIAN LAGE
Squint

Julian Lage, guitar; Jorge Roeder, bass; Dave King, drums
Blue Note (CD, LP). 2021. Margaret Glaspy, Armand Hirsch, prods.; Mark Goodell, eng.

PERFORMANCE ★★★★½
SONICS ★★★★½

I've been late in catching on to Julian Lage, the 33-year-old jazz guitarist who's been raising a lot of eyebrows. After recently seeing him play twice in three days at the Village Vanguard, where he displayed extraordinary virtuosity, swing, blues, and range, I'm now listening to his albums. (The two gigs were with John Zorn's New Masada Quartet and in duets with pianist Fred Hersch.)

Count me among the eyebrow-raisers. Lage is a phenom, and not the sort who flashes technique for its own sake. Everything he does is in service to the music. (On a few albums as a sideman, he has graced the music with special lighting but otherwise vanished into it.) *Squint* is his Blue Note debut, his second album with this trio, and his first to feature mainly his own compositions. On his last album with this group, *Love Hurts*, he covered tunes by Ornette Coleman, Keith Jarrett, Jimmy Giuffre, and Roy Orbison—which gives you a sense of his eclectic taste. This album's two covers, Johnny Mandel's "Emily" and "Call of the Canyon," made famous by Gene Autry, shimmer with beauty. His playing reveals a still wider array of influences: Jim Hall, Grant Green, Charlie Christian, Pat Metheny, and the various twangy, headstrong guitarists in Zorn's downtown orbit. Yet, he's not derivative: He has his own sound. His bandmates—bassist extraordinaire Jorge Roeder and propulsive drummer Dave King, from The Bad Plus—add a layer of hardcore insistence, even a strut and a backbeat, which sometimes keeps the music from basking too warmly in its own glow.

The recording, laid down at Sound Emporium in Nashville, sharpens this edge of grittiness just enough to keep things from sounding *too* pretty. There's presence, dynamics, and deep beauty galore. The LP is airier, the CD more dynamic.**—Fred Kaplan**

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JAZZ

JOE FARNSWORTH
City of Sounds

Farnsworth, drums; Kenny Barron, piano;
Peter Washington, bass
Smoke Sessions SSR-2105 (CD). 2021. Paul Stache,
Damon Smith, prods.; Edwin Huet, Paul Stache, engs.

PERFORMANCE ★★★★½
SONICS ★★★★½

We are at a point in time when most new jazz releases were recorded during the pandemic. Many are direct artistic responses to the crisis. The response of drummer Joe Farnsworth is bound up with the city where he has lived for 30 years.

In New York, the center of the jazz universe, the music stopped in early 2020. Farnsworth says, "I've learned so much from this city. Then New York got rocked, so I wanted to give back … by staying here and playing whenever and wherever I could to keep the sounds alive."

When he makes a rare record as a leader, Farnsworth brings in big hitters, like pianist Kenny Barron and bassist Peter Washington. The opening track, "New York Attitude," hurtles into motion. It is remarkable that Barron can connect ideas that are flying by so fast. "The Surrey with the Fringe on Top" is ecstatic. Farnsworth, using brushes, could not swing harder. Another ass-kicker is Barron's "Bud-Like," a tribute to Bud Powell, who is part of New York's cultural history.

The tunes on *City of Sounds* are mostly burners because New York is synonymous with energy and because energy and tenacity are now enabling the city to emerge from COVID darkness. The only ballad is "Moonlight in Vermont." What it has to do with New York isn't clear, but who cares? Barron renders Sigmund Romberg's melody beautifully, longingly, and then improvises alternative melodies, also lovely. Vermont is close, after all.

The Smoke Sessions label started in 2014 as a means to document live performances at Smoke, on 106th and Broadway. In February of 2021, *City of Sounds* had to be recorded in an empty club, with musicians in masks, separated by plastic barriers. It did not stop them from spilling their guts.—**Thomas Conrad**

ENRICO RAVA
Edizione Speciale

Rava, flugelhorn; five others
ECM 2672 (CD, available as download). 2021.
Manfred Eicher, exec. prod.; Peter Préal,
Maarten Heynderickx, engs.

PERFORMANCE ★★★★½
SONICS ★★★★½

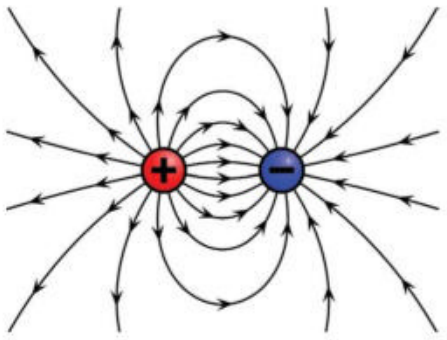
Enrico Rava rolls on. He was 80 when this album was recorded at the Jazz Middelheim festival in Antwerp, Belgium, in August 2019.

Rava likes to surround himself with players 40 or 50 years younger. Pianist Giovanni Guidi, bassist Gabriele Evangelista, and drummer Enrico Morello are the best Italians of their generation on their respective instruments. Six years ago, Rava brought in Francesco Diodati, a visionary guitarist. This new band, the Edizione Speciale, adds badass tenor saxophonist Francesco Bearzatti.

The solo firepower here is extreme, but Rava is most interested in collective-improvised interaction within ensemble form. His originals, like "Infant" and "The Fearless Five," at 13 minutes each, document the sextet's ability to integrate structural elements (such as embedded recurrent motifs) with audacious blowing.

Moment to moment, Rava's music is utterly unpredictable, and the causal relationships among those moments are counterintuitive. Take "Wild Dance": Guidi opens it with hovering, swirling forms. Then Rava's flugelhorn (on which he has a sound like the innermost voice of the human soul) repeats spare, haunting phrases, which are echoed by Bearzatti. Then Diodati's guitar enters, not with notes but with electronic rasps and distorted cries. Then Rava returns with long, mournful calls. Only Rava assembles such soundscapes.

Or take "Once Upon a Summertime," perhaps Michel Legrand's most perfect song. Rava dares to reimagine its beauty in lines that first imply the melody, then linger on it, guarding then releasing its sadness. Then Rava gives it to Guidi, whose delicate strand of rapt single notes completes the process of breaking your heart.—**Thomas Conrad**



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ROCK/POP

THE REPLACEMENTS
Sorry Ma, Forgot to Take Out the Trash (Deluxe Edition)

Rhino R2 659038 (4CD/1LP). 2021. Peter Jesperson, Paul Westerberg, Steve Fjelstad, prods./various engs.

PERFORMANCE ★★★★★
SONICS ★★★★½
(INTENTIONALLY LO-FI)

The Replacements have a great rock'n'roll Formation Story: Four rough-and-tumble Minneapolis kids, in and out of trouble, bitten by the music bug and headed for either stardom or dead ends. They chose to go all in and make this debut album, which is still heating the blood 4 decades on.

Front-man Paul Westerberg sums up the spirit of *Sorry, Ma* … in band biographer Bob Mehr's booklet essay. Years of "playing with guys in garages, basements … (and at) keggers" finally led him to brothers Bob (guitar) and Tommy (bass) Stinson and drummer Chris Mars. Westerberg: "It took me a long time to find guys who had no other fucking options in life. I needed desperation. 'Cause that's where I was coming from."

That plus a work ethic got the band to a recording contract, and the arduous process of honing the band's raucous persona into a first album is well-documented in this set. Included are early demos, studio outtakes, and a flaming-fast 1981 live set recorded at Minneapolis's 7th Street Entry. The LP, subtitled *Deliberate Noise*, is alternate versions, in the same song sequence as the original album.

Considered a classic in punk and hardcore circles, *Sorry, Ma* … has wider appeal as a hard-rock touchstone. The young band absorbed the new punk rock out of London and NYC and integrated it with older heavy metal, hard rock, and rockabilly. The breadth of music digested and regurgitated as original material is remarkable considering their ages: Westerberg and Bob Stinson were 20, Mars 19, and Tommy Stinson 14.

The Replacements went in different directions over a long career, but the work ethic and "desperation" never left them.
—Tom Fine

THE SPECIALS
Protest Songs 1924–2012

Island Records 3840702 (Import LP). 2021. Horace Panter, Lynval Golding, Terry Hall, et al., prods.; George Murphy, Tim Debney, engs.

PERFORMANCE ★★★★½
SONICS ★★★★½

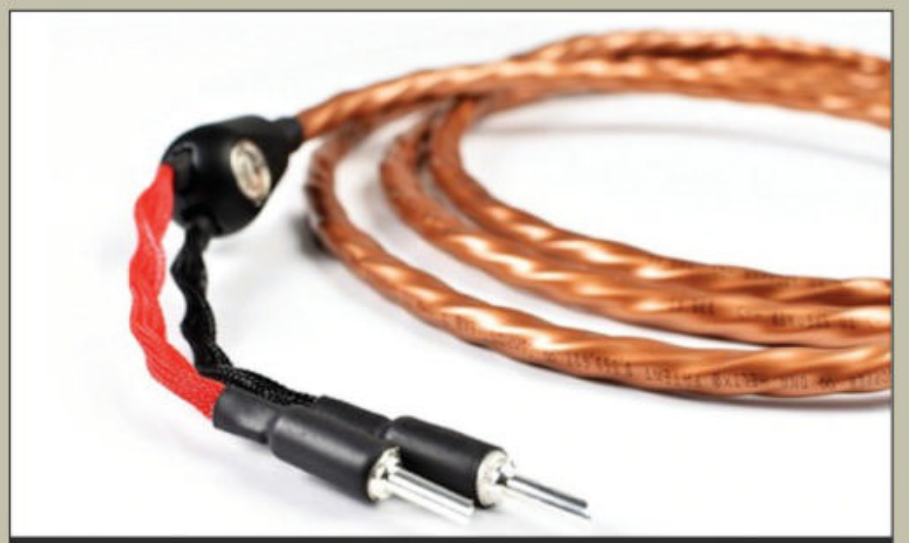
The Specials were a shot of musical adrenalin in the late '70s, the first of several UK bands to mix punk and ska, giving rise to the 2 Tone movement, which was named for the record label started up by Specials founder Jerry Dammers.

Social commentary was always an important element to this music, so this album of cover versions of protest songs is hardly out of character. But there are some surprises.

For a band rooted in the British experience, it's surprising and telling that most of the songs are American. Also, the ska part has gone away: The music is a mix of pop, folk, soul, and jazz. Then there's the decision to avoid some obvious candidate songs. True, there's a Staple Singers ("Freedom Highway") and a Bob Marley song ("Get Up, Stand Up"). But there are also fabulous takes on Frank Zappa's "Trouble Every Day" and Leonard Cohen's "Everybody Knows," both of which show that, while Terry Hall may not have the widest vocal range, he can interpret a song well.

It helps having quality fellow vocalists. Lynval Golding has been by Hall's side from the start. His deep vocals, with a Jamaican lilt, have always complemented Hall's deadpan delivery. His lead on an up-tempo version of Big Bill Broonzy's "Black, Brown and White" is one of the album's highlights. A new addition is Hannah Hu, an exciting young singer who duets with Hall on Talking Heads' "Listening Wind."

The record left me cool at first, but then it grew on me, my initial doubts allayed. The stripped-down production helped, reminding me of Fun Boy Three, the band formed in 1981 by three former Specials members. If an album like this had been too polished, it would have sounded fake. It doesn't. *Protest Songs* is authentic, relevant, and fun.**—Phil Brett**



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RE-TALES

BY JULIE MULLINS

THIS ISSUE: Manufacturers, distributors, and dealers weigh in on rising costs—and prices.

Prices and patience

You may have heard that many hi-fi companies—manufacturers, distributors, and dealers—have done very well during the pandemic years. Some reported their best years in business—ever. With COVID-19 forcing people to stay at home, people sought diversion through home entertainment, including music. The industry benefited.

This is exciting news: It's good for all of us when the industry thrives. But another, less welcome thing has been happening, too: Prices have started rising.

In one sense, this is hardly surprising: It's supply and demand, right? If demand increases but supply is fixed, or worse than fixed, you expect prices to rise. But is that really what's happening?

I spoke with several people in the audio industry to find out what's really going on. What factors are driving price increases, and why have they become necessary?

"Price increases are typically driven by the rising cost of raw materials required to manufacture key parts for the finished product and freight costs associated with receiving parts to the factory," a representative of a US manufacturer, who requested anonymity, told *Stereophile* in an email.

Why anonymity? It's curious. Obviously, companies need customers to know how much their products cost, and yet, for a lot of people in the industry, raising prices is a sensitive subject. Some proved unwilling to talk about it on the record. Others were willing to talk, but only if they could remain anonymous. To get the information we wanted to pass along to readers, we granted these requests for anonymity.

Manufacturers don't like to raise prices. But sometimes it's necessary. "I hate it. I know what it's like to be a kid with his nose pressed against the glass," dealer and distributor Kevin Deal, of Upscale Audio in La Verne, California, told me by phone. Upscale is facing two kinds of cost increases: manufacturing and shipping. "I'm only raising prices to cover extra manufacturing costs—not for increased shipping. I'm just holding my nose, hoping it will be over soon."

Companies that compete on price are taking a bigger hit. He cites PrimaLuna. "We have to raise [prices] on PrimaLuna because they raised the price on me," Deal explained. "We run on a really thin [profit] margin to begin with."

In much of the world, the pandemic is subsiding, but the times are still unpredictable. Companies are having a harder time forecasting the future. Even those that planned ahead and stocked up on critical parts are now facing shortages again as those supplies dwindle. Plus, they're paying a premium when they do succeed in sourcing the parts. "It's my 18th year in business, and I've never seen it where you can't get things like capacitors and resistors," electronics manufacturer Vinnie Rossi told me. "People are hoarding parts like they were hoarding toilet paper early in the pandemic."

Some US manufacturers, including Rossi, told me they'd had to overhaul electronics designs midstream due to the sudden lack of availability of essential parts. He's still waiting for some components he needs to build his newest amplification products. The parts are expected soon. (See the story on the new Vinnie Rossi Brama series in Industry Update, p.16.)

The costs of raw materials—neodymium, copper, aluminum—have increased, too, some by as much as 10%. Some short-term increases have been *much* higher. One manufacturer was able to build products but couldn't ship because a paper shortage meant they didn't have enough boxes.

According to one industry source, the cost of shipping freight from overseas in shipping containers has increased by a factor of four or more. One US manufacturer was hoping to avoid raising prices this year but faces "huge increases in freight costs to make parts available for production."

Apparently, the loudspeaker category has been hit hardest by shipping-cost increases, especially more affordable models. Speakers are often awkwardly shaped, so they take up more container space, which means that freight costs have a (literally) proportionally larger impact on those products than on products of similar size. Less expensive products are disproportionately affected because shipping costs are a larger share of total cost. And profit margins on those lower-priced items are narrower to begin with.

Labor costs are yet another issue. Due to COVID-related social-distancing requirements, factories were forced to reduce staff. Many closed for at least a few weeks. In the wider economy, companies that laid off staff have found it difficult to bring them back; it isn't clear yet whether that's been true in the hi-fi industry, but it might be.

Could the price increases be only short-term? Probably not, but maybe.

Upscale's Kevin Deal believes that shipping costs will come back down. He would advise other companies, "If you're making enough money to temporarily absorb the increases, then do it," rather than raise prices. But if costs go down, prices can go back down, too.

Still, "once a price increase goes into effect, it is difficult to go backwards," one source told me in an email. "At the moment, predictions for 2022 don't reflect any price reductions in material and freight costs. Hopefully, 2023 brings some form of stabilization, with material and freight costs landing somewhere in the middle to become the new normal."

Waiting for that new normal is easier said than done. Internet-era consumers used to fast gratification sometimes get frustrated and seek to cancel delayed orders. But companies are in the same boat they are: They can't be sure when a shipment will arrive, either.

"During these unpredictable times, it's important for end users to maintain a higher level of patience," a representative of one US manufacturer said in an email. After all, he continued, you're investing in a unique, high-performance product, not some cheap commodity.

"Most people have been pretty understanding," Deal said about reactions to delays and price increases. "I just hope they don't make a permanent decision based on a temporary circumstance."

Meanwhile, demand remains high. That's good news for the hobby and the industry. ■

MANUFACTURERS' COMMENTS

THIS ISSUE: Representatives of WAM Engineering, RSX, Woo Audio, and Accustic Arts respond to our reviews of their products.

WAM Engineering

Thank you, Michael Fremer, for your review of the WAM Engineering Cartridge Analysis service and corrective alignment shim in the December issue.

Over the last year, we have compiled a lot of data on the quality of stylus/cantilever assembly construction and, unfortunately, the results are disappointing. The variations we have measured in stylus rake angle and zenith error are too often so far off from ideal that no amount of twisting of the cartridge in the headshell or rake correction from a custom shim can correct the problem. Though we haven't analyzed all our data yet, our guesstimate is that the average zenith error is somewhere between ±2.2°–2.6° and the average rake error is even more. What's more, the variation in our dataset is large: We've seen zenith error as high as 14° and rake error up to 11°.

Our analysis process to determine zenith error looks at the angular relationship between the cantilever (which we can all see) and the record groove contact edges on the stylus (which are about 1/30th the diameter of a human hair). Finding the contact edges on a stylus is not easy, and measuring the groove contact edge's angular relationship to the cantilever is even harder, but we've invested heavily into the ability to do so. The data we have now collected is leading us into areas of vinyl-playback research that haven't been touched for decades. With modern computing power and engineering software at our disposal, we are now beginning to understand the type and magnitude of distortions that such misalignments create. We will release our findings for peer review in the near future.

J.R. Boisclair
WAM Engineering

RSX

Thanks to Michael Fremer for reviewing our RSX Beyond phono cable, and thanks to both Michael and Editor Jim Austin for the professionalism and extra care I know went into preparing and releasing the review.

Well before final approval for print, Jim contacted me to discuss the matter of the Beyond cable making the signal audibly louder. He and Michael actually ran two entirely different sets of measurements on both cables before they were satisfied that it was true, displaying a level of dedication to factual reporting rare in the audio press.

The explanation turned out to be the nature of the preamp Michael used for the review and the Beyond's phenomenally low internal resistance, even including its specially designed ultralow-mass connectors, which together proved lower than the hardwired (no connector) reference cable.

As to the cable's other aspects: Yes, of course it sounds great and reveals a new level of detail and refinement. With their entirely unique designs and special materials, all RSX cables do (as the awards for five of our seven products prove), and the Beyond is the best of the best.

The only nonpositive points I saw in Michael's review were his preference for the much more expensive AudioQuest Dragon power cord over RSX's Beyond AC Power Cord on a particular amplifier—which, not being there, I can neither confirm nor deny—and his statement that the leads on the Beyond Phono cable might be too short for some dual-mono preamps. But all our cables are handmade from scratch, so any lead length required can be ordered at the time of purchase at no extra charge. All in all, a great review.

Roger Skoff, Designer/Founder
RSX

Woo Audio

Thank you, Herb! We appreciate your thoughts. The new 3ES is a very special amplifier, as it follows the footsteps of our previous flagship WES electrostatic headphone amplifier, and because a relatively compact chassis is uncommon with balanced 300B tube amplifiers. 3ES borrowed the mechanical design from our flagship dynamic headphone amp/preamp, WA33. When the

initial prototype was developed, we were shocked not only by the sound, but also by the fact that it made *all* electrostatic headphones sound new again. If you think your old electrostatic headphones are a limiting factor, the 3ES will pleasantly surprise you. Doubling as a fully balanced preamplifier, 3ES is incredibly versatile and will provide a lifetime of music enjoyment. Audeze's entry in the electrostatic headphones, the CRBN, adds a new flavor into the mix, which is great news for headphones enthusiasts.

Jack Wu
Woo Audio

Accustic Arts

Yesterday, we once again determined the maximum power output of another AMP V at a test setup in our factory. Basic conditions:

- constant mains voltage of 232V
- 1 kHz sinewave continuous output
- THD + N = 1%

With this, we achieved the following results, with tests carried out in this order:

- 1. 8 ohms for 20 minutes ➔ max. output: 912W
- 2. 4 ohms for 15 minutes ➔ max. output: 1408W
- 3. 1.5 ohms for 5 minutes ➔ max. output 1530W
- 4. 2 ohms for 5 minutes ➔ max. output 1509W

After this treatment, the AMP V was hot, and it took around 120 minutes for it to cool down to a normal temperature inside. Nevertheless, directly after these measurements, the AMP V played without any problems. If we had continued with these measurements/treatments, the AMP V would have gone into protection mode (temperature safety switches inside) or the inside fuses could have blown (with a 2 ohm load only). In the future, we will publish the measurement protocols of the products on our homepage.

Jochen Voss, Managing Director
Accustic Arts

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MY BACK PAGES

BY TONY SCHERMAN

THIS ISSUE: She save her loving early in the morning just for me.

Ray's scream

Back in the mid-1960s, I was the unusual white, suburban preteen who, for reasons I've long pondered and never fully understood, was drawn much less powerfully to the Beatles than to blues and R&B. I was a bit of a jazz snob, too. Given these leanings, it's no surprise that one of the half-dozen or so albums that fried my impressionable young brain was that seamless blend of blues, R&B, and jazz, *Ray Charles at Newport*.

Though it was cut on July 5, 1958, at the still-new jazz festival, for some reason I always had the year at '57 and didn't realize my error until recently; I had barely ever glanced at the liner notes, so riveted was I on the front cover: His Own Bad Self in a shiny electric-blue suit, alto sax dangling from around his neck, the photograph snapped from below so that Ray is radically foreshortened, a pair of tree-trunk legs narrowing rapidly to a tiny pinhead, an image transfixing and ugly. Pre-crossover Ray, just 27 and arguably at his peak. (That's David "Fathead" Newman, the stalwart tenor man, behind Ray.)

If you were to hold my treasured copy up to the light, you'd notice that of the eight cuts, two are worn almost to the nub. It's those ruined two I'm here to talk about.

Ray Charles kicked early rhythm and blues, with its almost polite shuffle, into fifth gear, and he did it on November 18, 1954, in Atlanta. It was just another record session for just another Nat Cole imitator, but in the weeks prior, Ray had been fiddling around with a new, quite subversive, idea. He took an uptempo gospel song of the day, the Southern Tones' "It Must Be Jesus," and injected *sex* into the lyric. Lo, *There's a man giving sight to the blind* was now *She save her loving early in the morning just for me!* "I Got a Woman" shot to #1 on the R&B chart, and black music tilted. The Saturday-night/Sunday-morning proximity of sacred and profane, long an undercurrent, was now, as it were, explicit. Which made a lot of people, including blues singers, nervous. "He's got the blues he's crying sanctified," complained Big Bill Broonzy. "And I know that's wrong. He should be singing in a church."

Maybe so, but here, he's trashing Newport with six-plus minutes of filthy testifying over the tightest of tight-assed rhythm sections; the '54 single is rinky-dink in comparison. Ray starts out rubato, portentously, whisking right-hand arpeggios up the keyboard, moaning in that rheumy voice. *Whoa-oh shumtimes I get a little worried/But I wanna tell y'all it's allright, yeah/Beeeeee.... CAUSEIGOTAWOMAN!* and Ray, band, and Raelettes are out of the starting block. Everything slams to a halt for a stop-time bridge of macho utter bullshit—*She know her place is right there in her home*—then it's back to speed in the stretch, Ray wailing like a banshee over an endless one-chord riff, shades of James Brown funk to come, except Ray, as is his wont, is genre-hopping nonstop: a little calypso here (Harry Belafonte was all the rage then), a little minor-interval downward slide there that sounds like nothing so much as a cantor. Here, a nod to the venue (*I got a woman/Right here in Newport!*); there, a few flexes of the screaming muscles. Big crescendo and out. All rise.

"I Got a Woman" shot to #1 on the R&B chart, and black music tilted.

Killer #2, the album's final song, is another extended take on another tame original, from 1955. It is Ray Charles's finest moment (cue the howls of dissent).

"Thankyouverymuchladiesandgentlemen. And now we'd like to do something that we're sure that uh, each and everybody can understand. And that's the *blues*. Everybody can understand the blues!"

Ray's composition "A Fool for You" unspools, seven-plus minutes of exquisite torture in slow 3/4 time. *I know you told me/Such a long time ago/That you didn't want me 'round no mo'*.

I haven't got space to tell the whole story, but here's how it turns out: The horns slowly build, build, *build*—and then drop out. And Ray unleashes what to me, who has spent years cataloguing recorded music's great screams, is *the one*: a goosebump-inducing, neckhair-raising *WHAAAAAAGHH!!* that seems to hang in the air forever, even though it's only five seconds long. That anybody can marshal such overwhelming power for *any* amount of time—well, go listen. It doesn't even sound like a human voice, but it is one, and not a 10-horsepower chainsaw in overdrive. I have never heard anything like it, and I doubt I ever will.

Yes, James Brown has his transhuman moments, and yes, we have the young Wilson Pickett of "I Found a Love." We also have Joe Cocker taking a deep breath and unfurling that larynx-shredder out across Yasgur's farm in "A Little Help from My Friends," so moving because Joe gives himself over to the moment so completely. We have Ray himself, elsewhere, on other recordings. I'm not here to get into an argument. All I'm saying is, I'm lucky to have stumbled across—homed in on, rather—so historic a moment at such an early age.

On school mornings around 1966—that would be seventh grade—I'd drag myself out of bed at 6:45, stumble over to the record player, put the needle on *At Newport*, set the volume superlow so as not to terrorize the household, and go back to bed for another 15 minutes. I don't know how other kids charged their batteries, but this is how I charged mine. One of my most effortlessly recaptured early memories is of Ray Charles's voice, tiny but insistent, wrecking the house at Newport as I drifted in and out of sleep. It's how I started my day. ■

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